

BIENNIAL REPORT
Florida
GAME & FRESH WATER FISH
COMMISSION
1947-48

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1947-48



BEN C. MORGAN
DIRECTOR

Game and Fresh Water Fish Commission

TALLAHASSEE, FLORIDA

31 December 1948

COMMISSION MEMBERS

J. W. CORBETT, CHAIRMAN
FORT PIERCE, FOURTH DISTRICT
CECIL M. WEBB, TAMPA
FIRST DISTRICT
MILTON H. BAXLEY, GAINESVILLE
SECOND DISTRICT
LOUIS G. MORRIS, MONTICELLO
THIRD DISTRICT
ELLIS F. DAVIS, KISSIMEE
FIFTH DISTRICT
EARL D. FARR, PUNTA GORDA
ATTORNEY

Honorable Millard Caldwell
Governor of the State of Florida
Tallahassee, Florida

Sir:

Herewith is the report of the activities of the State Game and Fresh Water Fish Commission for the period ending December 31, 1948. We, the members of this Board, feel justified in being proud of this particular report. We feel that in it is reflected the greatest two years of progress in the history of this commission. We sincerely hope it meets with your approval.

Respectfully submitted,

John W. Corbett
J. W. Corbett, Chairman

JWC/ak

BIENNIAL REPORT
Florida
GAME
& FRESH WATER FISH
COMMISSION



BIENNIUM ENDING DECEMBER 31, 1948



CECIL M. WEBB
Commissioner



J. W. CORBETT
Chairman



MILTON H. BAXLEY
Commissioner



BEN C. MORGAN
Director



LOUIS G. MORRIS
Commissioner



ELLIS F. DAVIS
Commissioner



COLEMAN NEWMAN
Assistant Director

The People of The State of Florida

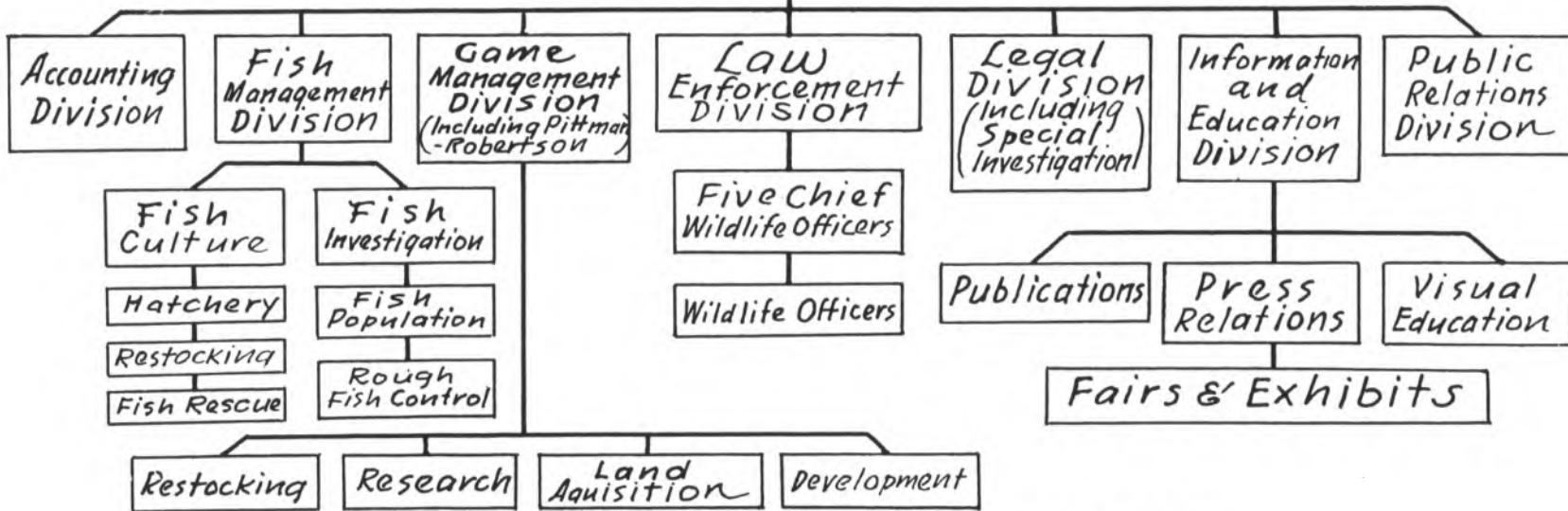
Governor

Game & Fresh Water Fish Commission
- Five Members -

Director

Assistant Director

General Administration



ORGANIZATIONAL CHART OF THE GAME AND FRESH WATER FISH COMMISSION

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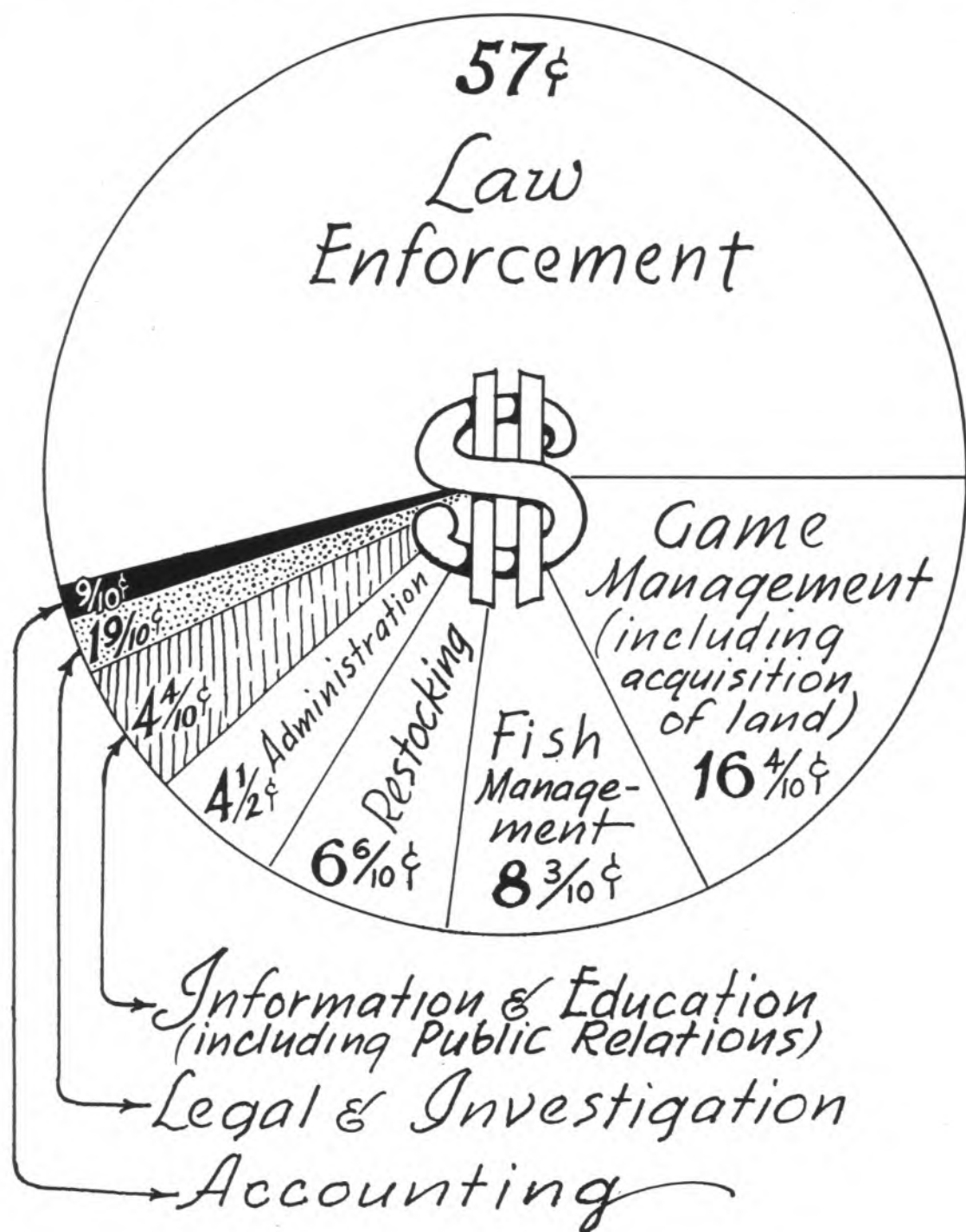
The
COMMISSION'S
REPORT



BEN C. MORGAN
Director

COLEMAN NEWMAN
Assistant Director

FLORIDA'S CONSERVATION DOLLAR



GENERAL ACTIVITIES

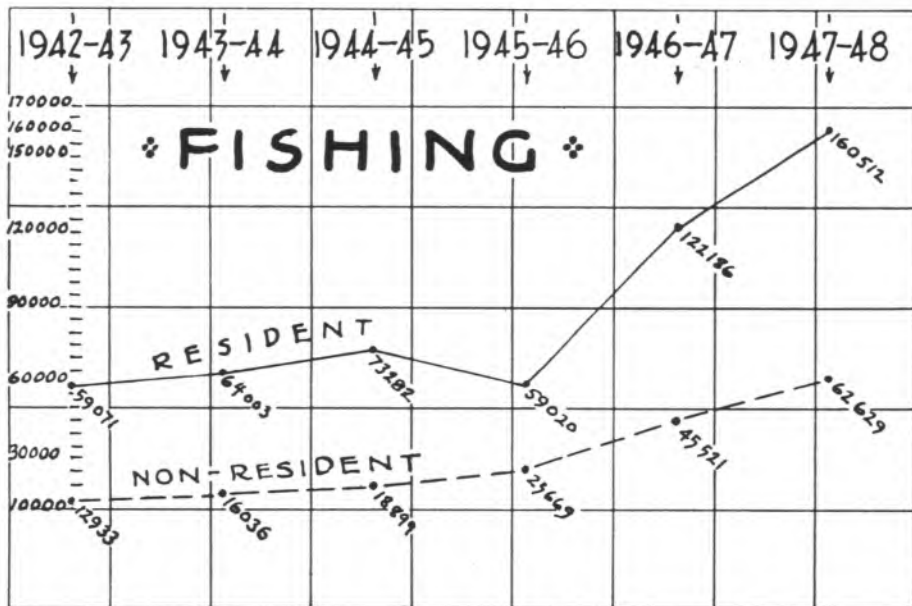
DURING 1947-48 the Game and Fresh Water Fish Commission made perhaps the greatest progress in Florida conservation history. The Commission has seen a terrific expansion in man power and activities, and a streamlining of general policy as well. Until two years ago, Florida's conservation set-up had ranked fairly well in the South. However, compared to the states throughout in the north, it ranked rather low. At present, however, the state's conservation program is generally regarded as one of the top ten in the nation. Considering that many northern states have had full-fledged, comprehensive conservation programs in action for more than two decades, it is gratifying to see Florida rated along with them.

Two years ago the Game and Fresh Water Fish Commission had less than 200 employees, 170 of them wildlife officers. Despite the fact that the state had been beset with game and fisheries problems for years, no technical or biological staff had ever been organized. Conservation education and public relations had not been developed to any extent. Law enforcement was not what it should have been. Today the Commission has a total of 291 employees, 228 of whom are wildlife officers; 40 are biologists, technicians or specialists in other fields, and 23 are general administrative employees or laborers.

Staff expansion was not the only signs of progress during the past biennium. A few of the more prominent steps taken by the Commission was the setting up of a fisheries investigation program, the establishment of game survey and game restoration projects and a land acquisition program, the appointment of a new director and assistant director, the creation of a division of information and education, purchase of uniforms for wildlife officers, purchase of vehicles and other equipment for the law enforcement branch, establishment of a state-wide quail survey and trapping program, heavy restocking of deer and turkey, formulating a plan whereby cattlemen in southwest Florida would open their rangelands to hunters, the setting up of a two-way radio communication system for wildlife officers, the requirement of an oath of office for all wardens, and the establishment of an annual school for law enforcement officers. Those are a few of the major steps taken by the Commission. Consolidated and viewed in all their detail, this represents a terrific expansion program.

Increased Hunting and Fishing Pressure

The reasons for such an advanced program are obvious. At the end of the war it became apparent the limited facilities of the Game and Fresh Water Fish Commission could no longer compete with the tremendously-increased pressure on our game and fish resources. The army of hunters and fishermen had mounted with alarming rapidity. During the fiscal year of 1946-47 more than 168,000 fishing licenses were sold, as compared to slightly over 72,000 in 1942-43. Hunting pressure had also shown a terrific increase. In four years hunting license sales went from 65,000 to over 100,000. The figures continued to climb in 1947-48. During the past fiscal year over 223,000 fishing licenses were sold to break all records. Hunting licenses continued to run over the 100,000 mark. With this terrific expansion in hunting and fishing, it was obvious the agency charged with regulating the sports had to be expanded also.



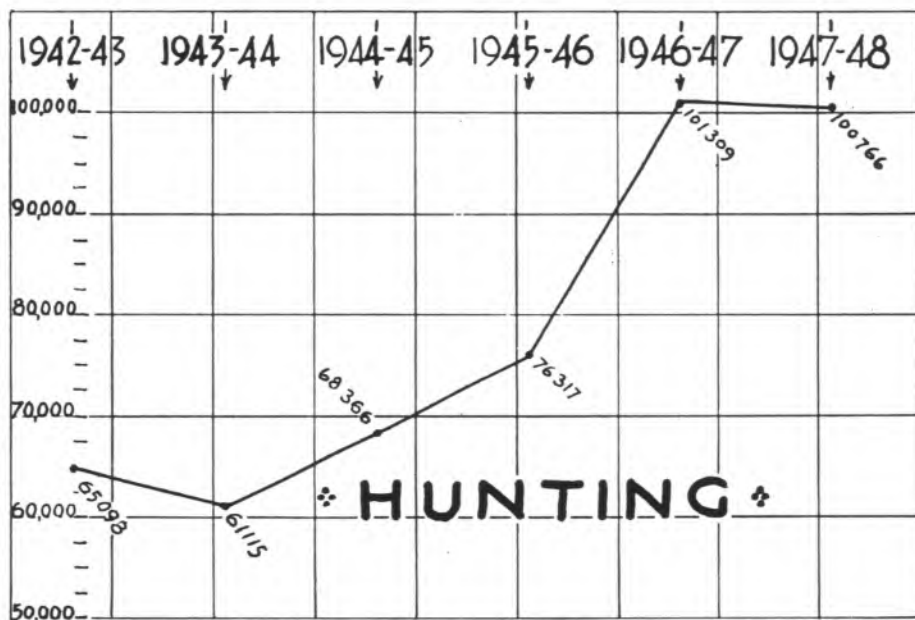
The above chart shows increased fishing pressure over the past five years.

Economic Value of Wildlife

In addition to this, Florida sportsmen and citizens alike had begun at last to see the crying need for a comprehensive, long-range wildlife conservation program. Mr. Average Citizen began to realize that our game and fish resources possessed economic value as well as recreational value. A survey by a national magazine last year showed that hunting and fishing was a \$4,000,000,000 a year business in the United States. Figures taken from the Department of Commerce

and the U. S. Fish and Wildlife Service showed that more than 25,000,000 people throughout the nation participated in these too great outdoor sports. The income from the hunting and fishing, it was found, was one-third larger than the nation's retail gasoline sales and twice as big as the nation's retail liquor sales. After a lengthy survey, the U. S. Fish and Wildlife Service placed a dollar value stamp on the various species of wildlife. They found that every pound of bass caught in our lakes contributed approximately \$2.00 to our state economy. They found it cost the sportsmen more than \$100 to kill a deer, \$10 to kill a goose and \$5 to kill a duck. All this adds up to a big business in hunting and fishing.

In Florida, these figures were even more significant. Being primarily a tourist state, one of Florida's greatest attractions is fishing. A survey by the Game and Fresh Water Fish Commission last year indicated that resident, licensed anglers alone spent more than



The sale of hunting licenses has also shown a sharp increase since 1942.

\$56,000,000 for fresh water fishing. Taking these facts—increased hunting and fishing pressure, and the new found economic importance of the two outdoor sports—into consideration the Commission, the sportsmen and the people realize that a more streamlined conservation program had to be established.

LICENSE SALES BY COUNTIES

	1947-1948 FISHING		1947-1948 HUNTING	
	Resident	Non-Resident	Resident	Non-Resident
Alachua	4737	634	3615	14
Baker	768	20	574	5
Bay	5843	974	1563	20
Bradford	994	104	471	9
Brevard	996	524	1279	17
Broward	2974	901	774	4
Calhoun	1826	4696	875	41
Charlotte	321	171	275	58
Citrus	2345	3208	1101	68
Clay	1063	146	779	5
Collier	232	57	186	
Columbia	1114	195	1148	12
Dade	4918	423	3252	9
DeSoto	1235	109	702	5
Dixie	240	102	821	13
Duval	16176	465	6520	32
Escambia	5719	269	4160	8
Flagler	173	35	372	2
Franklin	329	512	487	10
Gadsden	2393	2994	2426	6
Gilchrist	501	20	628	4
Glades	661	311	172	4
Gulf	1365	2097	820	28
Hamilton	224	422	542	12
Hardee	1430	89	821	3
Hendry	1766	742	563	4
Hernando	1224	156	1144	4
Highlands	2574	1022	639	8
Hillsborough	15379	377	5850	16
Holmes	1340	2447	832	27
Indian River	777	182	396	8
Jackson	1495	1157	2124	31
Jefferson	466	741	727	147
Lafayette	568	35	529	1

Organization

The Commission itself was reorganized and revamped in the spring of 1947. A new director was hired to replace Dr. I. N. Kennedy, who had resigned. The salary of the new director was set at \$8,500 a year in order to attract and keep a man of high caliber. A new budget was approved and the entire Commission reorganized on a departmental basis.

Today the Commission is separated into 7 divisions which function directly under the supervision of the director. The policy and rules and regulations of the Commission are formulated by five non-salaried Commissioners—one from each conservation district. The divisions that make up the Commission are Accounting Division, the Fish Management Division, Game Management Division, Law Enforcement Division, Division of Information and Education, Legal and Investigating Division and the Public Relations Division.

LICENSE SALES BY COUNTIES

Lake	4096	4884	2343	37
Lee	1475	471	992	19
Leon	3424	3028	3445	245
Levy	852	177	1894	19
Liberty	561	393	539	16
Madison	632	168	756	27
Manatee	1929	298	953	5
Marion	5253	5086	4103	78
Martin	621	438	245	8
Monroe	9	5	36	2
Nassau	360	175	1240	8
Okaloosa	1178	666	2229	48
Okeechobee	1224	777	305	2
Orange	11232	3402	3133	33
Osceola	1235	718	747	8
Palm Beach	4819	760	1696	6
Pasco	2018	251	1121	9
Pinellas	5442	695	1597	15
Polk	10796	1776	5494	10
Putnam	1465	998	1877	12
St. Johns	643	131	2147	6
St. Lucie	1034	215	552	5
Santa Rosa	1075	265	1763	8
Sarasota	1385	290	808	9
Seminole	2471	439	1192	7
Sumter	2228	672	1492	22
Suwannee	1209	51	1157	13
Taylor	590	411	1427	14
Union	301	19	823	
Volusia	3833	1240	3579	16
Wakulla	774	1573	922	107
Walton	805	1869	1357	38
Washington	1377	3951	681	17
TOTAL	160,512	62,629	99,262	1,526

The Accounting Division consists of four employees to keep an account of all the receipts and disbursements plus the maintaining of statistical records.

The Fish Management Division is divided into two sections, the Fish Culture Section, which has charge of all artificial propagation and restocking activities, and the Fisheries Investigation Section under which population surveys, rough fish control studies and similar scientific projects are carried out.

The Game Management Division, which is largely supported through federal aid funds, under the Pittman-Robertson Act, has charge of setting up game surveys, game restoration projects and a land acquisition program.

The Law Enforcement Division, of course, is the biggest and perhaps the most important of them all. It is charged with the enforcement of all rules and regulations put into effect by the Commission.

The Division of Information and Education is charged with the handling of all relations with the press, the preparation of all Commission publications, the administration of a visual education program and the setting up of wildlife exhibits at fairs and exposition.

The Legal Division handles all the Commission's legal matters plus special investigations in certain law enforcement situations.

The Public Relations Division consists of two men whose general objectives fall under the Division of Information and Education but who are administratively separate.

Increased Expenditure

This tremendous expansion program has, of course, cost money. During the fiscal year of 1947-48 Commission operating budget ran slightly over a million dollars as compared to \$321,000 three years before. This year the operating budget is over \$1,500,000. Much of this capital outlay, however, has gone into the purchase of equipment and will represent both increased efficiency and economy in the long run. Much of it has also gone into the purchase or lease of lands for public hunting.

This is one of the most serious problems confronting Florida. While hunting pressure has increased, the acreage of valuable hunting land has decreased. It is estimated that more than 75% of Florida's best game territory is posted against public hunting. The solution of this problem is one of the top projects of the Commission. During the past biennium the agency has purchased 52,000 acres of land to be used for public shooting, and leased 110,000 more. Through arrangement with the U. S. Forest Service, U. S. Air Force and the Florida Forest Service and by lease and outright purchase, the Commission has now made available some 2,106,956 acres of public shooting area. Below is a list of the areas owned by or under a cooperative wildlife management agreement with the Game and Fresh Water Fish Commission.

PUBLIC HUNTING AREAS

Area	Location	Acre	Owned By
Eglin Field	West Florida	460,000	U. S. Government
Apalachicola National Forest	West Florida	638,217	(Air Force)
Osceola National Forest ...	Northeast Florida ..	161,814	U. S. Forest Service
Ocala National Forest			U. S. Forest Service
Gulf Hammock Wildlife Management Area	Central Florida	441,925	U. S. Forest Service
Charlotte County Wildlife Management Area	Levy County	110,000	Robinson Land & Lumber Co.
Palm Beach County Wildlife Management Area ..	Charlotte County ..	61,000	
Blackwater State Forest ...	Palm Beach County	52,000	Game & Fresh Water Fish Comm.
	West Florida	182,000	Game & Fresh Water Fish Comm.
TOTAL		2,106,956	Florida Forest & Park Service

All of the above areas except two owned by the Game and Fresh Water Fish Commission are now open to public hunting. The Charlotte County Area is being used to produce quail for restocking other parts

of the state. The Palm Beach County Area has only recently been purchased and will be protected from hunting for five years to permit game populations to build up. On all the areas listed a portion is set aside as a breeding ground.

Restocking

More than \$100,000 has been set aside in the current operating budget for restocking purposes. Restocking, though not the answer to all of our wildlife problems, is an important and necessary part of any long range conservation plan. During the past two years important restocking projects have been carried out for quail, deer and turkey, and, of course, for bass and bream and other species of game fish. In 1947 31,075 quail were purchased from Mexico at \$2.00 each and released in shot-out areas over the state. In 1948, however, the Mexican government clamped an embargo on quail and none could be imported for restocking. As a substitute the Commission launched a state wide quail trapping program whereby birds would be taken from citrus groves, suburban areas and other places inaccessible to hunters and transplanted in sections where the quail population is low. Under this plan land owners on whose property quail are trapped will be paid 50 cents a bird. Trapping is under the supervision of Commission biologists and wildlife officers. It is estimated that more than 100,000 birds can be obtained in this manner.

During the biennium 474 white tail deer have been imported from Wisconsin and released throughout the state. Thirty-five of these deer were released in 1947 and 439 in 1948. The deer cost \$90 a piece. Two hundred of them were purchased out of Game Commission funds. The remainder were purchased from funds received from the Livestock Sanitary Board as a reimbursement for the more than 9,000 deer slaughtered during the tick eradication program several years ago. The Commission plans to continue restocking deer habitats at the rate of about 200 a year.

In 1947 337 half-wild turkeys were also purchased by the Commission for restocking purposes. Biologists, however, have questioned the effectiveness of restocking with semi-tame turkeys. Instead, this year the Commission plans to trap wild birds from overstocked sections of the State and move them to sparsely populated areas.

During the calendar years 1947-48, the Fish Management Division released 9,376,000 fingerling fish in waters throughout the state. These fish were produced at a cost of \$5.34 per thousand at the Commission's three hatcheries—Winter Haven, Wewachitchka and Holt. A total of 194 bodies of water were restocked with fish in 1947 and a total of 171 waters received fingerlings in 1948.

Scientific Research

In spite of the comparatively short time the Game and Fish Commission's research program has been in effect, a great deal has been accomplished. Scientific investigation is recognized as one of the fundamentals in wildlife and fish conservation. Until two years ago there has been little or none in Florida. During the report period, however, there have been numerous important surveys and studies made of Florida's wildlife and fisheries.

In the fisheries division, individual lake studies have been made in 13 counties in addition to spot surveys throughout the State and the two long range, comprehensive research programs now under way on Lake Okeechobee and St. Johns River.

In the game management division there has been a quail research and development program instituted in Charlotte County. A state wide census of deer and turkey population and a state wide water fowl restoration program has been launched and in North Florida a project has been started to develop farm game habitat. In 1949 a state wide quail census will get underway.

These various research programs have already begun to contribute toward wiser and better game and fish management. Many pre-conceived ideas have been contradicted and many new ideas developed. It was found, for instance, that controlled burning and limited grazing is an aid to quail production in the southern part of the state. It was also found that considerably too much emphasis has been placed on predator control and restocking. Through scientific wildlife investigation, the commission has now learned habitat improvement and protection is the best medicine for a sick game supply. In fisheries, biologists found that in many cases the state's problem was one of too many fish instead of not enough. Biological surveys in practically every section of the state indicated that over-population rather than scarcity was the reason for poor fishing. It was found that a body of water would support only a certain poundage of fish and that in many waters fish were too numerous to allow any number to reach a legal size. For this reason in 1948 the Commission abolished all legal size limits on fresh water fish. It also removed closed seasons except in a few local areas. Biological investigation had proven that it was useless to close a season in an effort to protect spawning fish, since it was found fish in Florida waters spawn virtually every month out of the year. Findings like these will help the Commission pursue a wise path toward effective game and fish restoration.

Commercial Fishing

One of the most controversial subjects with which the Commission has had to deal during this report period was the netting of

game fish on Lake Okeechobee and St. Johns River. These two bodies of water were closed to netting in 1946 by the Commission. Commercial fishermen appealed the matter to the State Supreme Court which early in 1947 upheld the authority of the Commission. In the 1947 session of the legislature a total of five bills were passed designed to allow the resumption of netting on the two bodies. In the course of time all five of these legislative acts were found to be unconstitutional and the Supreme Court once again affirmed the right of the Commission to regulate fishing on Lake Okeechobee and the St. Johns River.

Meanwhile the fish management division had begun investigation on the two bodies of water to determine definitely whether or not commercial netting was detrimental to fish supplies. The research program on the two bodies was outlined to cover a two to five year period. At the same time the Commission had agreed to allow commercial netters, under a special permit system, to take catfish and other rough fish by means of traps and pound nets. Early in 1948 the Commission appointed a 14-man committee to study the situation on the two lakes and make recommendations. The committee recommended that the Commission enlarge its biological staff in order to shorten the survey. Acting on the recommendation of the committee the Commission granted additional funds to the fish management division, and adopted a plan whereby commercial netters could participate in the scientific survey. Under this program at least preliminary answers to the controversial commercial fishing question are expected to be available some time in 1949.

Illegal fish traps confiscated by wildlife officers.



U. S. Forest Wildlife Management Areas

The Wildlife Management Areas established on the Apalachicola, Ocala and Osceola National Forests are operated under the terms of a cooperative agreement between the Commission of Game and Fresh Water Fish and the U. S. Forest Service. Game management plans for the areas are prepared stipulating seasons, bag limits, stocking plans and law enforcement organization. Beginning in 1948, special management rules for the management areas were incorporated in the Wildlife Code of the State of Florida.

Apalachicola Forest

During 1947 and 1948 the Apalachicola Forest management area remained closed to the hunting of deer, squirrel and game birds, since these populations have not been adequate for general hunting. However, during this recovery period, the management area is in effect a breeding ground and has improved hunting in open season areas adjacent to it.

Bear hunts were conducted in 1947 and 1948. The 1947 hunts consisted of six hunts of three days each. A total of 89 bear hunters bagged three bear. The same system of hunts was conducted in 1948. The 35 bear hunters failed to bag a bear, due, primarily, to failure on the part of the dogs used.

These nets were taken from fresh water lakes in Okaloosa County.



Osceola Forest

This management area has remained closed to all hunting during 1947 and 1948. The deer population is increasing and each year better hunting is reported in adjacent areas. A bear hunt in 1949 is under consideration.

Many improvements in the boundaries and administration of the Florida National Forests Cooperative Wildlife Management Areas are under consideration. Constructive criticisms are being received from the hunters in increasing numbers each year, indicating a growing realization on the part of the hunter that these facilities are for them to use and enjoy in a manner which will produce an annual game crop.

Ocala Forest

Florida employs three wildlife officers who are regularly assigned to the Ocala management area and adjacent territory. The 10th and 11th Annual Ocala Hunts were conducted in 1947 and 1948, respectively. A record number of 3957 hunters participated in 1947. The following is a summary of the 1947 and 1948 hunts:

	1947	1948
Adult Hunters (over 18 years old)	3550	3477
Youths	407	345
Total	3957	3822
Legal Deer Kill		
Spike Buck	155	56
3 points or more	219	231
Unknown	8	0
Total	382	287
Crippling losses (legal bucks)	8	13
Illegal and dog killed deer		
Does salvaged	13	20
Does not salvaged	13	25
Illegal Bucks salvaged		10
Illegal Bucks not salvaged		7
Total known losses	31	75
Arrests	10	5
Convictions	4	3

The 1948 Hunt was the first one under the spike law; which partly accounts for 95 less legal deer being killed in 1948. However, many hunters moved outside the management area after the third to fifth day and got their buck, without having to turn their permit in. At least 20 of the deer losses were due to being chased or caught by dogs. Spike bucks represented 42% of the 1947 kill. The 1948 legal deer kill was classified by condition groups as follows: Excellent—23%; Good 50%; Fair—24%; Poor—3%.

Salvage deer were turned over to non-profit institutions for use on their menus. The legal kill record for 1948 is complete; the losses are nearly complete. About 38% of the hunters in 1948 have reported their kill of other game, which is shown below in comparison to 1947 reports, which were very incomplete:

Species	1947	1948
Squirrels	440	1134
Quail	81	54
Bear	1	2
Waterfowl	11	57
Furbearers	No season	19
Other	No season	20

There was one non-fatal gun accident in 1948; none in 1947. One hunter died of a heart attack while hunting each year.

No trapping permits were issued in either 1947 or 1948, indicating the present lack of interest in harvesting furbearers.



Wildlife officers net stranded fish from a South Florida drainage ditch for removal to deep water.

Florida Wildlife Federation

The Game and Fresh Water Fish Commission has made a great deal of progress during the past two years. Much of it could not have been accomplished without the help of the Florida Wildlife Federation and other sportsmens' clubs in the state. The Federation and its able president, Ralph G. Cooksey, originally recommended many of the most successful innovations put into effect by the Commission. It was the Federation that first recommended a division of information and

education. Other recommendations made by the organization including uniforming of the officers, uniform hunting seasons and a study of the state's pollution problem. The Wildlife Federation was reorganized in November 1946 after having been virtually dormant for some time. Ralph Cooksey, prominent St. Petersburg businessman was elected its first president and has been re-elected each succeeding year.

In 1947, shortly after the Federation's reorganization, it boasted 23 clubs and a total membership of 6,000. Today it has a total of 66 affiliates with an active membership of over 16,000. Federation officials have been instrumental in forming many of these new clubs. It has in its 2 years of progress established an educational service which works closely with the Commission's Division of Information and Education. To date the Federation has prepared two free booklets on conservation activities and has in the mill several more. In addition, it offers a free speaker service to every sportsmen's club in the state. Through its activities more and more sportsmen are finding that a united front is the strongest weapon against the forces that would exploit our wildlife resources.

Trapping

There is considerable trapping in Florida, but generally speaking fur sales cannot be considered economically important in the overall game and fish picture. There is a total of 11 licensed fur dealers throughout the state. During the trapping season of 1946-47 these dealers handled a gross volume of 9,908 furs. Raccoon pelts constituted the heaviest fur traffic. A total of 5,400 were shipped out of the state. Next in volume was alligator hides with a total of 1,711 handled. In addition, dealers handled 446 otter furs, 195 opossum hides, 104 mink, 76 fox, 62 skunk, 13 wildcat and 5 civit cats.

During the 1947-48 season fur-dealing slumped considerably. Only 4,320 hides were handled during that period. 2,219 of these were raccoon and 476 alligator. The remainder was made up of other species. These figures, of course, do not include furs shipped out of the state by individual trappers.

Future Plans

The commission has made much progress in the past two years, but it hopes to make even more as time goes by. For one thing, it hopes to develop Florida into the wild turkey capitol of America. At present we have about 35,000 birds in the state, a population second only to Texas. This, however, is only a fraction of the population that can be developed. Biologists estimate there are more than 8,000,000 acres of top-flight turkey range in Florida. Beginning this year, the commission will start restocking these various areas at the rate of

about 300 wild-trapped turkeys per year. With such restocking and added protection, game technicians feel that within 15 years the state can boast a turkey population of more than 150,000 and support an annual kill of at least 30,000. If this is accomplished, Florida will soon be to the turkey hunters what the Dakotas are to the pheasant hunters.

The same situation exists relative to deer. According to a census taken last year, Florida now has about 32,000 whitetails. By judicious restocking and careful protection, biologists say the number can be increased to at least 400,000 in a period of from 10 to 15 years. This would compare favorably to stocks in such deer-hunting meccas as Pennsylvania, Michigan and Wisconsin.

The commission hopes within the next few years to establish a permanent training school for would-be wildlife officers. Rookie officers would be given at least six weeks intensive training and examinations before being allowed to take the field.

Next year the commission hopes to embark seriously on a statewide hyacinth eradication program. This problem is fast becoming a terrific detriment to fresh water fishing. If it is not controlled, it could very well, within a few years, virtually destroy the vast fish resources the state has labored so long to preserve. Hyacinth eradication will necessarily be a widespread and expensive proposition, costing at least a half-million dollars a year. It can not be carried on unless a new source of revenue is found; however, it is hoped that the next session of legislature will see fit to consider possible revenues to carry out this important work.

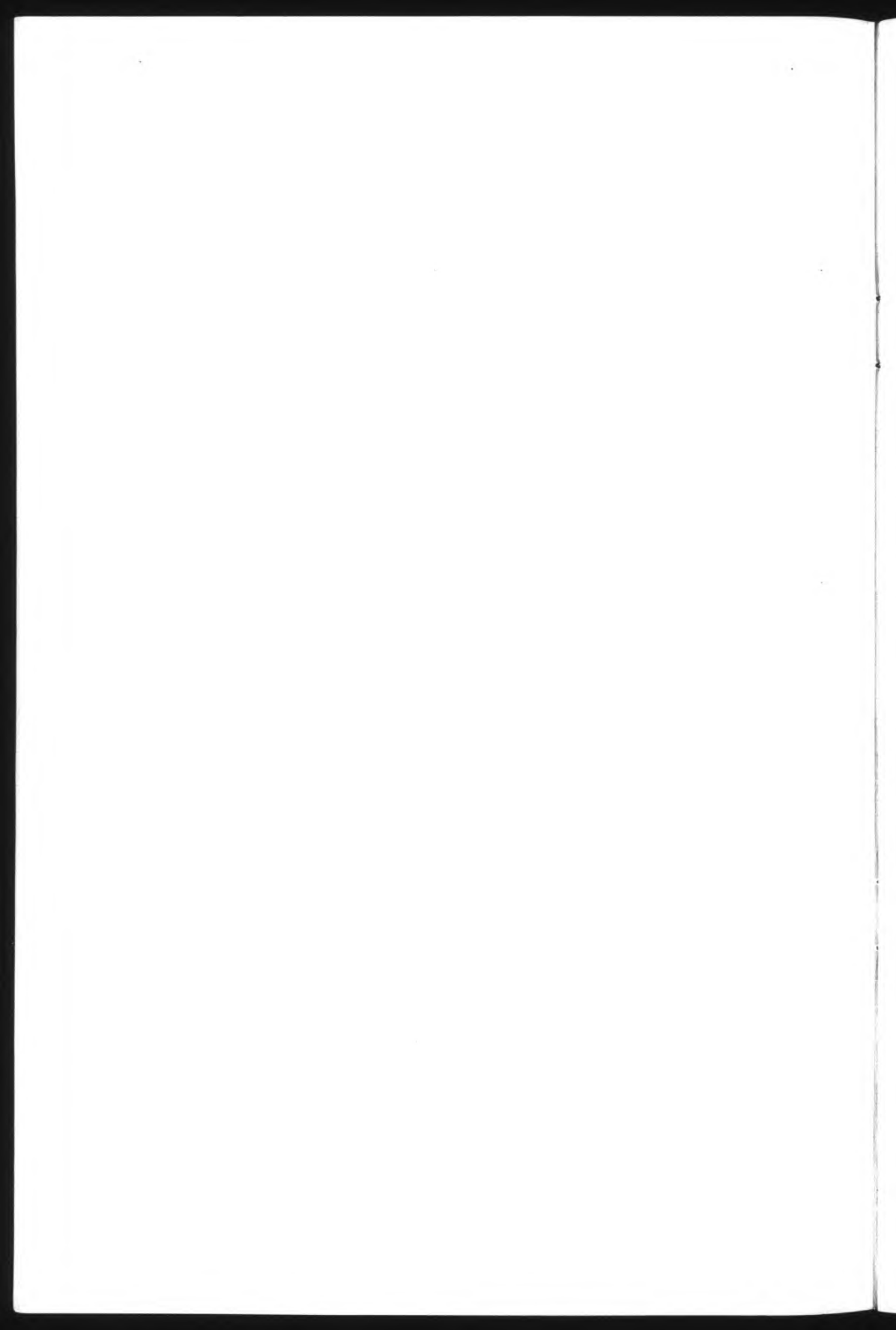
The commission also hopes to continue and expand its scientific research program. Within a period of five years it is hoped that careful study can be made of virtually every fresh water body in the state in an effort to improve sports fishing. More and more study will be devoted to quail, dove and waterfowl. From these studies will come the solution to our wildlife problems.

A vastly more expanded conservation education program will be activated. More work will be done in the schools in an effort to train the sportsmen of tomorrow in the ways of conservation. Text books will be prepared and visual educational facilities will be explored to the fullest. All this will cost money; perhaps a great deal of money. However, every modern sportsman knows that the dollars spent for conservation today are buying a priceless heritage for the generation of tomorrow.

GAME MANAGEMENT DIVISION



O. EARL FRYE, JR.
Chief Wildlife Biologist



GAME MANAGEMENT

THE past two years were marked by the greatest period of progress in wildlife management in the history of conservation in Florida. Three major factors combined to bring this about: (1) The Constitutional Amendment of 1942, which enabled the Game and Fresh Water Fish Commission to proceed in wildlife restoration with a minimum of political interference. (2) The demand backed by sportsmen for sound wildlife management practices to procure better hunting on the ever decreasing hunting territory for the ever increasing army of hunters. (3) The increase in the Federal Aid (Pittman-Robertson) appropriation which made funds available for a constructive research, development and land acquisition program.

This period has witnessed an increase in employment of men trained in the science of wildlife management; a greater emphasis on sound wildlife management practices such as habitat improvement; the enlargement of the research program designed to diagnose the basic causes for game shortages and to work out methods for remedying such shortages; and a great increase in the amount of land acquired for development as public hunting areas. At the same time there has been a decrease in such popular, but generally unproductive, so called conservation measures as hap-hazard restocking and predator control.

There is a gradual, almost reluctant, acceptance of a realistic viewpoint toward wildlife management; a realization that wildlife management is not simply restocking with game, employment of additional game wardens, or setting of hunting seasons, but instead is a tremendous complexity of biological, human, and economic relationships.

Florida has definitely passed through the "save what we have left", politically run, phase of wildlife management and is headed toward a progressive program that will result in an increased harvestable surplus of game for the Florida sportsman.

The most important game birds and mammals of Florida are the bobwhite quail, the white tailed deer, the wild turkey, the several breeds of wild ducks and geese, the mourning dove and the grey squirrel. These animals will be taken up individually in the following discussion with brief remarks as to the steps that have been taken toward their management. The Federal Aid projects mentioned in the foregoing discussion will be treated in detail under the report of Federal Aid activities.

Quail

There are three primary clear cut factors that have been operating to reduce quail in Florida in recent years. These are: (1) The increased mechanized "clean" farming in farming areas. The first farming operations in Florida with their small fields, rail fences and general crops resulted in the production of ideal quail habitat. With the advent of mechanized equipment the fields were enlarged, fence rows cleaned out, and large acreages planted to one cash crop such as cotton, and quail decreased. (2) The growing of dense stands of unburned slash pine for pulpwood in north and west Florida. The paper mills in Florida have caused a demand for enormous quantities of young pine for pulpwood. This has resulted in the growth, largely through fire protection, of dense stands of slash pine and a heavy understory of wiregrass and other vegetation that combine to produce very poor quail habitat. (3) The disking of tremendous acreages of formerly good quail territory in south Florida for improved pasture. Here the removal of palmetto cover has resulted in complete elimination of quail from such areas. Quail must have cover to survive.

Unfortunately for quail, these practices are all of great importance to the economy of the state and cannot therefore be sacrificed for the welfare of quail. On the other hand, there are minor modifications of all three practices that can result in substantial benefits to quail if sufficient inducement can be found to influence the landowner to apply the remedial measures.

The importance of overhunting of quail has been greatly overemphasized. Because of the distribution of areas such as dense woodlands or citrus groves where the birds are comparatively safe from the hunter, and the fact that quail hunting becomes no longer worthwhile long before all breeding stock is eliminated from a large area, quail have rarely been reduced to such an extent that they cannot build up to the carrying capacity of the land within two normal years. The problem of quail management in the state is clearly, then, one of increasing the carrying capacity of the land through habitat improvement.

On the other hand, it is believed that in certain areas, such as the open flatwoods of south Florida where birds are particularly vulnerable to overshooting, quail are reduced every year below the normal breeding population of the area. Under such conditions careful restocking with wild quail is believed to be worthwhile. Following this thought 31,075 Mexican quail were imported at a cost of approximately \$2.00 each in the spring of 1947 and released throughout the state. No birds could be purchased in 1948 due to a ruling against shipping of quail from Mexico.

During the past two years a number of quail have been trapped from various breeding grounds and urban areas by wildlife officers, notably in south Florida, and released in open territory. With the exception of 2,083 trapped from the Charlotte County Game Man-



Wild quail feed under a trap near Welaka. Extensive quail trapping is now being carried out throughout the state.

agement area in 1947, no accurate record of the number of birds so handled is available. In consideration of this background a project was begun in the summer of 1948 under the leadership of a trained biologist to organize a statewide quail trapping program to utilize birds now "going to waste" on breeding grounds and in urban areas. Careful records are being kept of the success of this project to determine if the results justify the expenditure of funds in trapping these birds.

In addition to the quail restocking efforts three Federal Aid projects dealing specifically with quail, were carried out or were started during the past two years. These projects are discussed in the portion of this report dealing with Federal Aid activities.

Deer

The situation with regard to deer is entirely different from that outlined for quail. Whereas the primary factor that can increase quail in Florida is habitat improvement, the primary deer management procedure is protection against overhunting. There is a tremendous amount of satisfactory deer habitat in Florida that is now underpopulated. On such areas deer can be increased tremendously, simply by protection against overhunting and judicious restocking.

One important illegal hunting practice that has helped decimate the Florida deer population has been that of "jacklighting" deer at night. In using this method the hunter blinds the deer with a bright light and is able to approach within easy gunshot range. A recent ruling by the Game and Fresh Water Fish Commission making

illegal the possession of a light and gun at night for the obvious purpose of molesting game has gone, and will continue to go, a long way toward stamping out this completely unsportsmanlike practice.

The deer population in Florida has shown a definite increase in the past few years due to three major factors: (1) Better enforcement of game laws; (2) The posting of large tracts of land by cattlemen and other private interests. (3) The general movement of homesteaders from rural areas, particularly in the ranching areas of south Florida.

The Florida deer population suffered a tremendous blow during the deer slaughtering tick eradication campaign of 1939 to 1944. During this period an official total of 9,478 deer were slaughtered in Orange, Osceola, Glades, Highlands, Hendry and Collier Counties. Since 1942 Florida has made extensive efforts to replace these deer. In the spring of 1947, 35 deer were released in the Ocala National Forest. This represented a decrease from previous years since the money which had previously been made available for deer purchase by the Livestock Sanitary Board was used by them to control a new outbreak of the Texas fever tick in Florida. In the spring of 1948 a total of 439 deer were purchased, at a cost of \$90.00 each, for restocking purposes. Of this total 239 were bought with Livestock Sanitary Board funds and the remaining 200 were bought with Game and Fresh Water Fish Commission funds. These animals were released in various places over the state, particularly in those counties where deer were slaughtered during the tick eradication campaign.

The deer released in the past two years were purchased from Wisconsin and as yet no conclusive information has been obtained relative to their survival in the entirely different habitat offered by Florida.

Beginning with the 1948 release all deer were tagged with numbered aluminum ear tags in an effort to determine their survival after release in Florida.

Turkey

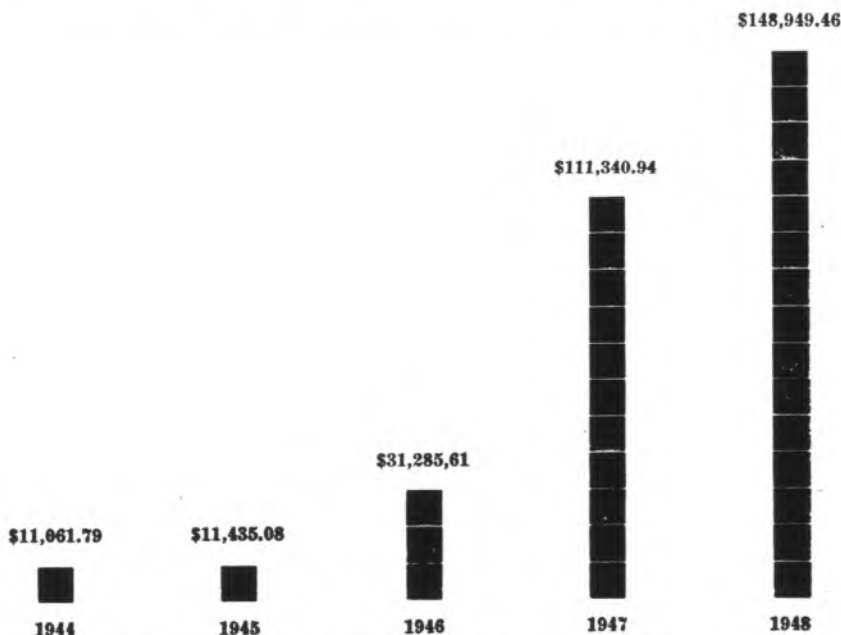
As with deer, the immediate problems of turkey management in Florida are protection from man and the restocking of key areas. The recently completed Florida deer and turkey survey indicates that Florida probably has more good turkey habitat and more turkey than any state except Texas. At the same time it has shown that much of the turkey habitat is underpopulated.

Florida has recently completed plans for a long range turkey restoration program under the direction of a trained biologist. This program is based largely on the establishment of key restoration and management areas over the state. Such areas will be restocked with wild-trapped, native Florida turkeys where necessary. Arrangements are being made to trap turkeys on several areas over the state, particularly on lands in Glades County belonging to Lykes Brothers, Incorporated.

The two Federal Aid research projects mentioned in the discussion of deer, also dealt with turkey. As a general rule factors influencing one species are important to the other.

During the period covered by this report the game commission purchased 337 half wild turkeys which were liberated in Marion, Lake, Osceola, Seminole, Orange, Volusia, St. Johns, Putnam, and Brevard Counties. The Commission is aware of the fact that the half wild turkey is a poor substitute for the native wild trapped bird for restocking purposes, but felt that in the absence of a readily available stock of wild birds this action might be justified. In other states extensive studies on the survival of half wild turkeys have been conducted, and it has been found that only under the most careful protection from overhunting have these birds been able to survive. Many of the claims of success made by advocates of the use of domestic turkeys in Florida seem to be without foundation. It appears that most of the increase in turkeys on areas restocked with tame birds can be attributed to the remaining wild stock that was given an opportunity to increase as a result of the protection from overhunting that accompanied the restocking efforts. There is no doubt that semi-domestic turkeys can be raised under semi-domestic conditions but the end result is a half wild barnyard fowl that has lost much of its true sporting value and is unable to cope with heavy hunting pressure.

FEDERAL AID ALLOTMENTS FOR 1944-48



The above chart shows federal aid receipts over a five-year period.

Waterfowl

Duck and goose hunting in Florida is not the important sport that it is in some of the states to the north. Only a comparatively small percentage of the tremendous amount of water area in Florida is good waterfowl habitat. The Lake Okeechobee marsh is the outstanding waterfowl habitat in the state.

Waterfowl hunting in Florida is dependent largely upon the continental waterfowl population and, as it now stands, there is little that Florida can do to increase waterfowl other than supply good wintering areas. Florida is unique among states, however, in that it possesses one excellent game duck, the Florida Duck or Florida Mallard, that breeds in the state and remains in the state throughout the year. If a suitable method for increasing this duck can be found it offers excellent possibilities for supplying duck hunting to the Florida sportsman.

One Federal Aid project was begun in 1948 to inventory and classify waterfowl habitats and populations within the state. This was done with the specific idea of discovering means of improving waterfowl habitat and thereby possibly increasing the size of the wintering waterfowl population. Another specific objective of this project is the investigation of possible means for increasing the Florida Duck.

Mourning Dove

As with waterfowl the Mourning Dove is classified as a migratory bird and comes under the jurisdiction of federal game agencies. It is most important as a game bird in the corn and peanut farming areas of the state. The dove population throughout the country has steadily decreased during recent years. Because of this decrease, and because of the yearly controversy concerning dove seasons and the general lack of knowledge of dove movements and life history, a coordinated study of the mourning dove is being planned for the southeastern states. Florida's participation in this study was approved by the Game and Fresh Water Fish Commission but as yet a qualified man to direct the work in Florida has not been found. One of the specific objectives of this study is the acquisition of knowledge concerning movements of the dove for use as a background for a more equitable and satisfactory arrangement of dove hunting seasons.

Squirrel

Of the two species of squirrel listed as game animals in Florida the cat or grey squirrel far outclasses the fox squirrel in numbers, popularity, and quality as a game animal. Fox squirrels are generally shot incidentally by persons hunting other game.

There appears to be very little that can be done at this stage to benefit squirrels in Florida other than to properly regulate their hunting.

The Federal Aid Program

For the past two years much of the financial load of Florida's wildlife management program has been carried by the United States government under a federal aid program.

In 1937 the Federal Aid in Wildlife Restoration Act, commonly called the Pittman-Robertson Act, was approved by Congress. This bill provided that funds realized from an excise tax on sporting arms and ammunition be apportioned to the states for use in wildlife restoration work, according to their area and their annual sale of hunting licenses. The state must match each three dollars of federal money received with one dollar of state money.

This money is to be spent by the state either on research, development, land acquisition or maintenance of projects, with a small percentage of the total fund set aside for administration. All expenditures must be approved by the U. S. Fish and Wildlife Service, the trustee of the federal aid fund.

Inasmuch as personnel as well as projects must be approved by the Fish and Wildlife Service, the bill was designed particularly to act as a stimulus to state game departments for beginning a progressive wildlife research and management program under the direction of scientifically trained men.

Due to a modification of the act, which permitted the entire years' revenue to be apportioned to the states, Florida's federal aid allotment was increased from \$31,285.61 in 1946 to \$111,340.94 in 1947 to \$148,949.46 in 1948.

Here are some of the projects undertaken under federal aid funds.

Charlotte County Quail Investigation

In January of 1946 a trained biologist was employed to study quail on the Charlotte County Game Management Area. The study was designed specifically to develop methods for increasing quail on the Charlotte County Area and generally to develop methods compatible with cattle raising for increasing quail in South Florida flatwoods.

Charlotte County research has been directed along several major lines of investigation: food habits of Charlotte County quail; weather, shooting pressure, and other factors influencing the quail population in Charlotte County; the sex and age composition of the Charlotte County quail populations; the effect of burning, grazing and disking on vegetation and the quail population; and experimental quail food plantings.

To date no plant has been found, with the possible exception of one or two native species, whose planting as quail food appears to be a practicable quail management procedure in South Florida Flatwoods. The best method of increasing quail food in Charlotte

County appears to be the stimulation of native quail foods by the proper use of fire, grazing and disking. Judicious burning is definitely beneficial to quail and indications are that winter grazing will also improve quail habitat in flatwoods areas.

Disking has been shown to greatly increase quail food plants on ungrazed areas the first year following disking. On areas not protected from grazing cattle seek out disked places and destroy most of the quail food plants. The planned management of quail on the Charlotte County area revolves primarily around winter grazing, controlled burning and removal of cattle during the quail food growing season.



Newly released deer browse in a protected area.

During the spring and summer of 1948 an experiment with artificial feeding of wild quail was conducted. Results of this study appear to justify an enlargement of the experiment to investigate the possibility that artificial feeding by means of automatic feeders may be the most effective means of increasing quail food on the Charlotte County Area.

Since the beginning of the Charlotte County study, analysis has been made of the crop contents of more than 1,600 quail. Most of these birds were obtained from hunting lodges in Charlotte County. In addition, 5,924 quail have been examined for sex and age. Information resulting from the latter study is extremely useful in evaluating breeding success as correlated with weather, hunting pressure, and other factors. The results of the three year Charlotte County Quail Investigation will be published in 1949.

Charlotte County Quail Project

This project is designed to put into effect management practices developed through the Charlotte County investigation project. The primary activities of the project have been controlled burning, disking, quail food planting, and maintenance of roads, bridges and other installations on the Charlotte County Game Management Area. Two equipment sheds have been constructed from lumber salvaged from old Army installations on the Area. More than \$600 has been realized from the sale of scrap metal, mostly bomb cases left on the Area by the Army.

In the spring of 1947, 2,083 quail were trapped from the Charlotte County Area for restocking other parts of the State.

Grazing rights on the Area are leased to the Babcock Florida Company at the rate of 10¢ an acre.

Coordination Project

The Coordination Project is designed to serve as a medium for liaison between the U. S. Fish and Wildlife Service and the Game and Fresh Water Fish Commission and to furnish immediate supervision of federal aid projects. One particular responsibility of the coordinator is the preparation of plans and reports for all federal aid projects.

Florida Deer and Turkey Survey

Florida with its 22,000,000 acres of forest lands, large uninhabited areas, and mild climate, offers unusual opportunities for production of deer and turkey. It is doubtful that any other southern state has the amount of deer and turkey habitat that is found in Florida. This is due, to a large extent, to the generally good distribution of different types of cover over the state. Almost every area of pine flatwoods is broken up by cypress ponds, cabbage and oak hammocks, or heavily forested stream bottoms. Almost every area of rolling sand hills is broken by lakes surrounded with cypress, bayheads, or oak hammocks. Many of the prairie lands of south central Florida have occasional cabbage palm or oak hammocks. In the cypress swamps of the Everglades there are ridges of slight elevation where grow pines, palmetto, oaks, and tropical broad-leaved trees. Even some of the sawgrass marshlands of extreme south Florida are dotted with frequent islands of bay, myrtle, holly and fern that offer some haven for deer.

In spite of the wealth of good deer and turkey habitat, populations of these species in Florida are low largely because of uncontrolled and indiscriminate persecution by man.

The state-wide deer and turkey survey, completed June 1948, revealed an estimated deer population of 32,466 in 63 counties. Only four counties do not have deer. There are 10 counties with a population of 1,000 or more; 13 counties with from 500 to 999; 7 counties

with from 250 to 499; 16 counties have from 100 to 249; and 17 counties have from 1 to 99. There are no forest areas of 100,000 acres or more that do not have a remnant of a deer herd. The counties without deer are devoted to agriculture and are divided into small rural ownerships.

The turkey population in the spring of 1948 was estimated to be 26,854. There are 7 counties with a population of 1,000 or more; 9 counties with 500 to 999; 16 counties with 250 to 499; 12 counties with 100 to 249; 18 counties with 1 to 99; and 5 without a population.

The deer and turkey range has been divided into two classifications—"good" and "habitable". "Good" habitat is that type of range that will support a desirable population for the entire year. "Habitable" habitat is that type of range that maintains only a very small population throughout all season. In this classification will fall areas that support a desirable amount of game for only short periods of time and then, due to a decrease in food or cover, or both, this population is forced to move elsewhere.

Florida has 14,209,000 acres of good deer range and 9,436,200 acres designated as habitable; 14,309,000 acres of good turkey habitat and 8,727,400 acres designated as habitable. Very little of the total forest game habitat in the state is desirable for only one of the two species.

A county-by-county tabulation of the survey is listed on page 35.

A wildlife border of bicolor lespedeza in North Florida.



Farm Game Habitat Restoration

The present project was begun in June 1947. Its specific objective is the improvement of agricultural land for quail, primarily through the planting of field borders to quail foods. A total of 159 plantings were made in 17 North Florida counties with Soil Conservation Service Districts cooperating. Plantings averaged approximately one-third acre and in the majority of instances consisted of Bicolor and Sericea Lespedeza. Some plantings were made in open woods and consisted of Bicolor only. Plantings of several other plants were made for the purpose of learning species adaptable to types of soil that did not prove suitable for Bicolor and Sericea. Bicolor plantings were made from 1-year old seedlings and involved the use of 100,000 seedlings. Plantings of other species were made from seed.

The type and number of plantings made in each county are shown by the following table:

TYPE AND NUMBER OF PLANTINGS

County	Bicolor	Sericea	Kobe Lespedeza	Korean Lespedeza	Sesbania	P'tridge Pea	Florida Beggarweed	Total
Alachua	4	5	1	0	1	0	1	12
Columbia	2	1	0	0	0	0	0	3
Escambia	5	2	2	0	0	1	1	11
Gadsden	4	3	2	1	1	1	0	12
Gilchrist	2	0	0	0	0	1	0	3
Holmes	1	1	0	0	0	0	0	2
Jackson	9	6	2	0	0	0	2	19
Jefferson	8	2	5	1	2	0	0	18
Leon	5	0	0	0	1	0	0	6
Madison	1	1	0	0	1	0	0	3
Marion	5	3	2	0	0	1	1	12
Okaloosa	6	6	0	0	1	1	0	14
Putnam	1	0	0	0	0	0	0	1
Santa Rosa	3	4	1	0	1	2	2	13
Suwannee	3	3	0	0	0	0	0	6
Walton	9	2	0	0	1	0	0	12
Washington	4	3	1	0	1	3	1	13
Total	71	42	16	2	10	10	8	159

In addition to these plantings seed and seedling blocks of partridge pea, Florida beggarweed and Thunbergii Lespedeza were established at the West Florida Agricultural Experiment Station in Santa Rosa County. These consisted of one-half acre seed blocks each of Florida beggarweed and partridge pea and a 1-acre seed block and 3-acre seedling blocks of Thunbergii Lespedeza. Seed and seedlings harvested from these plantings will be used in future development work in North Florida.

Heretofore little interest has been shown by the majority of landowners regarding the planting of wildlife field borders and food strips for quail. Landowners could see no immediate cash return or economic value to quail and were unwilling to expend

time and effort in improving food and cover conditions for them; instead habitats were destroyed and converted into cropland for the production of cash crops. Also until recently the presence or absence of quail has been of little interest to agencies cooperating with and advising the farmer. Therefore, lack of interest has largely been the result of lack of education in a conservative, balanced system of land use. Under present practices of wise land use, emphasis is placed upon the importance of wildlife as a product of the land that should be conserved and managed. On almost every farm the Soil Conservation Service classified a portion of the land as wildlife land and recommends that it be developed as such.

With management progressing along such sound lines and the Game and Fresh Water Fish Commission furnishing planting material for the development of farm game lands, conditions will surely improve. Although interest is still at a low level on the average farm, the picture brightens every year. More landowners, especially those who derive some recreation from hunting, are inquiring as to how they can improve their lands for quail. In 1949 the Commission expects to distribute 1,000,000 bicolor seedlings, ten times the number distributed this year.

Palm Beach County Land Acquisition

In 1947 the Game and Fresh Water Fish Commission received option on 50,000 acres of land in Palm Beach County at \$5.00 per acre. Its purchase is to be extended over a period of five years. In 1947, \$58,304.40 of the Federal Aid Fund was allocated to land purchase under the Palm Beach County land acquisition project.

The entire 50,000 acre tract is being fenced and will be managed primarily for the production of turkey, deer, and quail for public shooting.

Gulf Hammock Deer and Turkey Survey

The present project, begun in February, 1948, is designed to furnish information for management of deer and turkey on the Gulf Hammock Game Management Area. Emphasis is being placed on studies of deer and turkey habitat, particularly with regard to the effects of lumbering and other activities of man on vegetation, and the consequent effect on deer and turkey. Also emphasized in the project are counts of deer and turkey and studies of phases of their behavior and life history essential to a well organized management program. Information is being gathered relative to the history of the area to serve as background for determining future management practices.

The Gulf Hammock tract is predominantly calcareous hammock, which makes up about 60% of the total area. Marsh comprises about 20%, flatwoods 10% and cultivated or abandoned fields about 1% of the area. The remainder is made up of ponds, cypress swamps, cutover lands, and more or less indeterminate mixtures of the different types.

DEER AND TURKEY POPULATION BY COUNTIES

COUNTY	DEER
Alachua	25
Baker	750
Bay	20
Bradford	10
Brevard	390
Broward	350
Calhoun	50
Charlotte	370
Citrus	770
Clay	110
Collier	1,450
Columbia	1,000
Dade	550
DeSoto	25
Dixie	2,000
Duval	250
Escambia	50
Flagler	500
Franklin	100
Gadsden	150
Gilchrist	50
Glades	40
Gulf	75
Hamilton	50
Hardee	30
Hendry	250
Hernando	140
Highlands	175
Hillsborough	15
Holmes	0
Indian River	110
Jackson	30
Jefferson	510
Lafayette	624
Lake	210

TURKEY
30
50
100
0
690
0
300
300
720
12
700
0
265
60
1,500
775
200
400
20
100
30
1,680
125
3
26
300
50
305
335
68
280
172
975
175
12

COUNTY	DEER
Lee	575
Leon	630
Levy	1,340
Liberty	600
Madison	0
Manatee	13
Marion	3,440
Martin	100
Monroe	1,000
Nassau	1,050
Okaloosa	4,700
Okeechobee	130
Orange	650
Osceola	880
Palm Beach	122
Pasco	140
Pinellas	0
Polk	210
Putnam	190
St. Johns	450
St. Lucie	150
Santa Rosa	800
Sarasota	23
Seminole	590
Sumner	105
Suwannee	0
Taylor	1,035
Union	21
Volusia	190
Wakulla	250
Walton	2,000
Washington	2
TOTAL	32,613

TURKEY
190
807
1,800
400
5
25
380
30
50
200
125
450
2,200
1,530
60
350
0
640
200
900
200
280
22
745
1,840
0
625
14
225
150
275
303
<hr/>
25,779



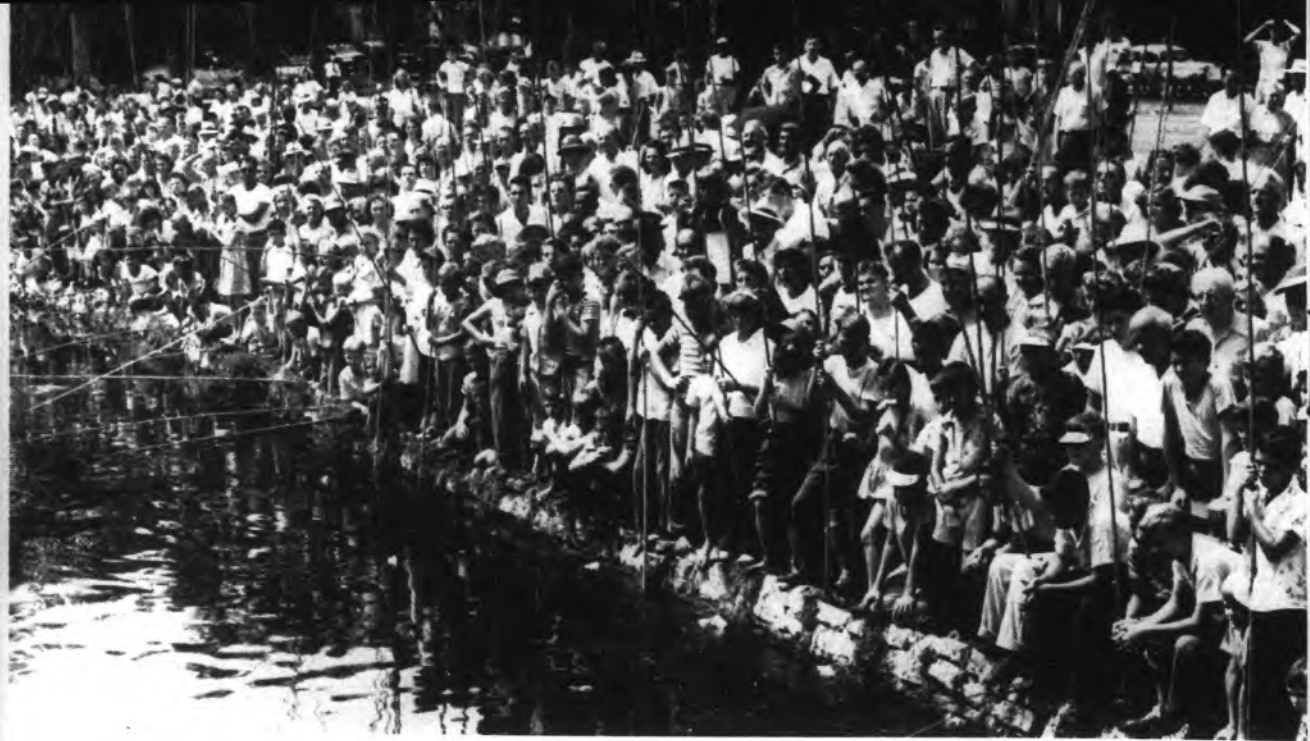
A wild turkey going to roost in North Florida. A census last year revealed that the state contains 35,000 turkeys.

The economy of the region was in the past, and is at the present, based largely upon logging and lumbering operations. Due to the rocky nature of the soil and to poor drainage, farming has been of little importance. Free ranging cattle and hogs have played, and continue to play, an important part in the economy of the inhabitants. In the past considerable dependence has been placed upon the game of the region both for sale and for food. Two market hunters in the 1880's accounted for over 1100 deer in a period of nine months.

Studies completed to date indicate that overhunting is the factor at present limiting the deer population. Hunting is also of importance to the turkey population but there is one habitat deficiency, insufficient open grass areas, that may outweigh hunting pressure. With these facts in mind the management program for Gulf Hammock will revolve around protection of both deer and turkey from excessive hunting and the establishment of grassy clearings for turkey.



An osprey flies to its nest on the scenic, cypress-studded Wakulla River.



TOP—Thousands of kids line a lake bank, awaiting the start of the Orlando Fishathon.

BOTTOM—Bass fishing on the famous Dead Lakes of Northeast Florida.





Cane-pole fishing against a striking backdrop of gum
and bay trees along the St. Marks River.



Closeup of two baby
water turkeys in their
nest.

A shaded, cypress-lined waterway through Dead Lakes.



Palm Beach County Fencing

This project was designed to fence the land purchased under the Palm Beach County Land Acquisition Project.

Advertisements for bids on the fence construction were published and a contract let to the low bidder, Mr. D. W. Rowell of Indiantown, Florida. The contract price for the fence construction, including cutting of posts, is \$199.00 per mile. The total estimated cost of thirty two miles of fence is \$11,793.76. Work was begun on the fencing project in the summer of 1948 and to date posts are set for more than 20 miles of the fence.

Florida Waterfowl Survey

This project is designed as an inventory of waterfowl habitat and populations throughout the state. Information resulting from it will serve as a background for a constructive waterfowl man-

A flock of coots on a lake in the St. Marks Refuge.



agement program. Among its particular aims are the development of techniques for waterfowl habitat improvement and investigation of possible methods for increasing the Florida Duck.

The bulk of the work has been concerned with waterfowl habitat investigations, with particular emphasis on food plant distribution and abundance. In the investigations, which have been conducted on about 90 areas, water quality tests are made, the type of substratum, physical characters of the shore, and the amount of water level fluctuation are noted. Submerged and emergent vegetation is recorded as to species, relative abundance, and, where possible, limiting factors. The knowledge of plant succession, growth requirements, and limiting factors to be derived from the accumulation of such data is necessary to any sound waterfowl management program. This is especially true in the South, where waterfowl management is very largely habitat management, *i.e.* water and plant manipulations.

Throughout the work so far, it has been apparent that over the state as a whole good food plants are not abundant. This seems to be the most widespread limiting factor of the various waterfowl areas. Another limiting factor in some cases is the density of the vegetation. In some places it is so thick that it is of very little value to ducks. On the other hand, there are several large areas in the state which are quite good. In them the numbers of wintering waterfowl will be dependent on the continental population rather than on local conditions. In this connection it must be remembered that the continental population this fall and winter (1948) is expected to be

This wildlife border of lespedeza provides food and cover for quail.



low again, about equal to that of last year. The state's two resident species, the wood duck and the Florida Duck, seem to have had a reasonably good breeding season. Even so, the total population of the Florida Duck, as determined by an airplane inventory, is smaller than was hoped. The State population is figured at 18,000 to 20,000 birds. At present its range is not great, and continued drainage of marshes will further restrict it. Maintenance of proper habitat is essential if this bird is to remain an important game species.

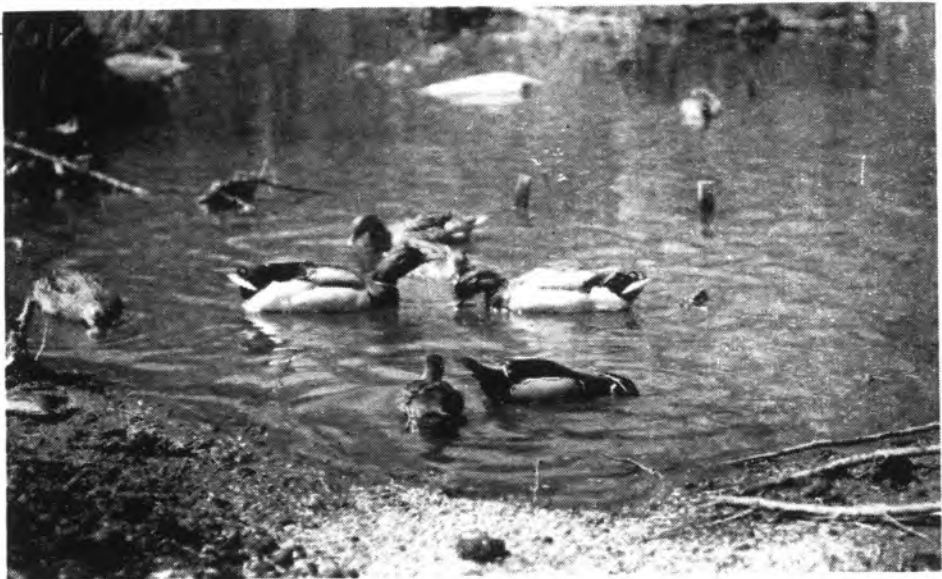
With the management techniques now at hand, those areas in the state most susceptible of development are the brackish marshes on both coasts, such as those on Merritt's Island. Impoundments in this type make good duck areas. Similar techniques could be employed on parts of certain rivers such as the Myakka and the Guano, and in parts of the lower Everglades. In addition, most inland water areas where the levels can be controlled have possibilities.

Gulf Hammock Fencing Project

The Game and Fresh Water Fish Commission and the Robinson Land & Lumber Company of Alabama have worked out an agreement whereby control of the wildlife on approximately 110,000 acres in the Gulf Hammock region will be turned over to the Commission for 25 years for management for public hunting. In exchange the Commission has agreed to fence the area and to furnish six permanent wildlife officers to patrol it and assist in the protection of the property against trespassers, timber theft, and general abuse.

The Gulf Hammock Fencing Project is designed to handle the cost of the fencing operation. An advertisement for bidders on this fencing job was published. All bids received were so high that it was decided to construct the fence with labor employed by the Commission

Mallards and wood ducks at play on Lake Apopka.



rather than to let a contract for its construction. The estimated cost of the forty five miles of fence needed is \$19,842.68. Work was begun on this fence in the summer of 1948.

Deer and Turkey Restoration

Upon the completion of the Florida Deer and Turkey Survey the leader of the survey was appointed leader of the present project. This project is designed to administer and develop the several deer and turkey restoration areas scattered over the state. An important part of the project is the trapping of native wild turkey and deer for restocking purposes. The provisions of the Pittman-Robertson Act require that deer and turkey trapped or purchased with Federal Aid funds be released only on lands that will be protected from hunting for at least five years. With this in mind, deer and turkey handled under the present project will be released only on specified management areas.

Areas set aside for restocking include the Apalachicola National Forest, the Hardee County Game Management Area and the Palm Beach County Game Management Area.

It is believed that 200 deer a year for the next five years will restock all desirable ranges. The restoration of turkey will take longer. Probably 200 turkeys a year for the next eight years will be required for the turkey restocking program.

The acreage seriously needing restocking with either deer or turkey is relatively small—approximately 2,480,000 acres of turkey range and 2,712,000 acres of deer range.



FISH MANAGEMENT DIVISION



JOHN F. DEQUINE
Chief Fisheries Biologist

FISH MANAGEMENT DIVISION

Chief Fisheries Biologist
Asst. Chief Fisheries Biologist

FISH CULTURE SECTION

Maintenance Engineer

*Blackwater
Fish Hatchery*

*Winter Haven
Fish Hatchery*

*Wewahitchka
Fish Hatchery*

*Fairs, Exhibits, "Fishathons"
Fish Propagation,
and Distribution.
Fish Rescue, etc.*

FISHERIES INVESTIGATION SECTION

*Lake Okeechobee
Fisheries Survey*

*St John's River
Fisheries Survey*

*Rough Fish
Control Studies*

*Fish Population Studies
Fisheries Biology
Fish Tagging
Rough Fish Control, etc.*

ORGANIZATIONAL CHART OF THE FISH MANAGEMENT DIVISION

FISH MANAGEMENT

THE Fish Management Department was set up late in 1946 for the purpose of making a scientific analysis of Florida's fresh-water fishes, with the aim of producing better sport fishing and making maximum utilization of our fish resources. The department has expanded during the two years of operation until it includes the activities of twenty-six employees. Operations are under way in many phases of fish management.

The various divisions and the organization plan is shown in the figure on the opposite page. For a complete report on the activities of the Fish Management Department, it is necessary to describe these by the individual project names. For convenience all of the hatches are grouped together.

Fish Culture and Distribution

The table on page 55 shows the production and distribution of fish for the calendar years, and the distribution of fish by counties.

In addition to fish cultural activities, the personnel and equipment of the fish hatcheries have been active in other projects. Among these are the exhibition of live fish in aquarium displays at various county fairs, the state fair and other events. The locations of these displays put on in 1947-48 are listed below:

1947

Tampa State Fair
Orange County Fair
Lake County Sportsmen's Exposition, Eustis
Convention of Outdoor Writers of America at St. Petersburg
Pensacola Interstate Fair
Leon County Fair, Tallahassee

1948

Tampa State Fair
Orange County Fair, Orlando
Lake County Sportsmen's Exposition, Eustis
Jackson County Fair, Marianna
Pensacola Interstate Fair
Leon County Fair, Tallahassee
Gadsden County Fair, Quincy
Bay County Fair, Panama City
Northeast Florida State Fair, Jacksonville

Another activity which has demanded personnel and equipment has been the various "Fishathons." These have been held in St. Petersburg, Tampa, Orlando and Miami. Plans are in the making for expansion of this activity during the coming year, as well as for the establishment of permanent fishing lakes for children.

St. John's River Fisheries Survey

In June 1947, a survey of the St. Johns River was initiated with the following aims—to determine:

1. Standing fish population, and inter-relationship between species.
2. Potential annual yield of food and game fishes to determine amounts which can be taken without damage to seed stock.
3. Effect of various types of fishing gear on game and food fishes, with emphasis on determining proper equipment for use by commercial fishermen to harvest the annual crop of food fishes and control rough fish.
4. Formulation of enforceable regulations benefiting spawning conditions and habitat for both game and food fishes.
5. Accurate records of catches by sports fishermen.

Although this project has been under way for over a year, it is not expected that it will be completed for several years. It is hoped, however, that tentative recommendations can be made for the management for this body of water by June, 1949. Extensive studies of the effect of wire traps, pound nets and shad and herring seines used under certain conditions determined that these types of fishing gear could be used by commercial fishermen to harvest catfish, rough fish and shad and herring with little or no damage to the game fishes. These operations are at present being conducted under a permit system. The results of these studies are summarized elsewhere.

Seven seining crews are operating between Volusia Bar and Jacksonville removing rough fish and making studies of the total fish populations of the St. Johns River. Each commercial fishing crew is accompanied by a fisheries technician or biologist in the employ of this Commission. It is expected that the survey will determine the proper place of commercial fishing activities in this body of water so that these activities may continue to control rough fish. A number of fish have been tagged in this area, but additional time is necessary to obtain results from the tagging.

Lake Okeechobee Fisheries Survey

Some preliminary work was done in Lake Okeechobee during 1947, but it was not until August, 1948, that this project got under way. The objectives of this survey are similar to those outlined for the St. Johns River. Seven commercial fishing crews, each



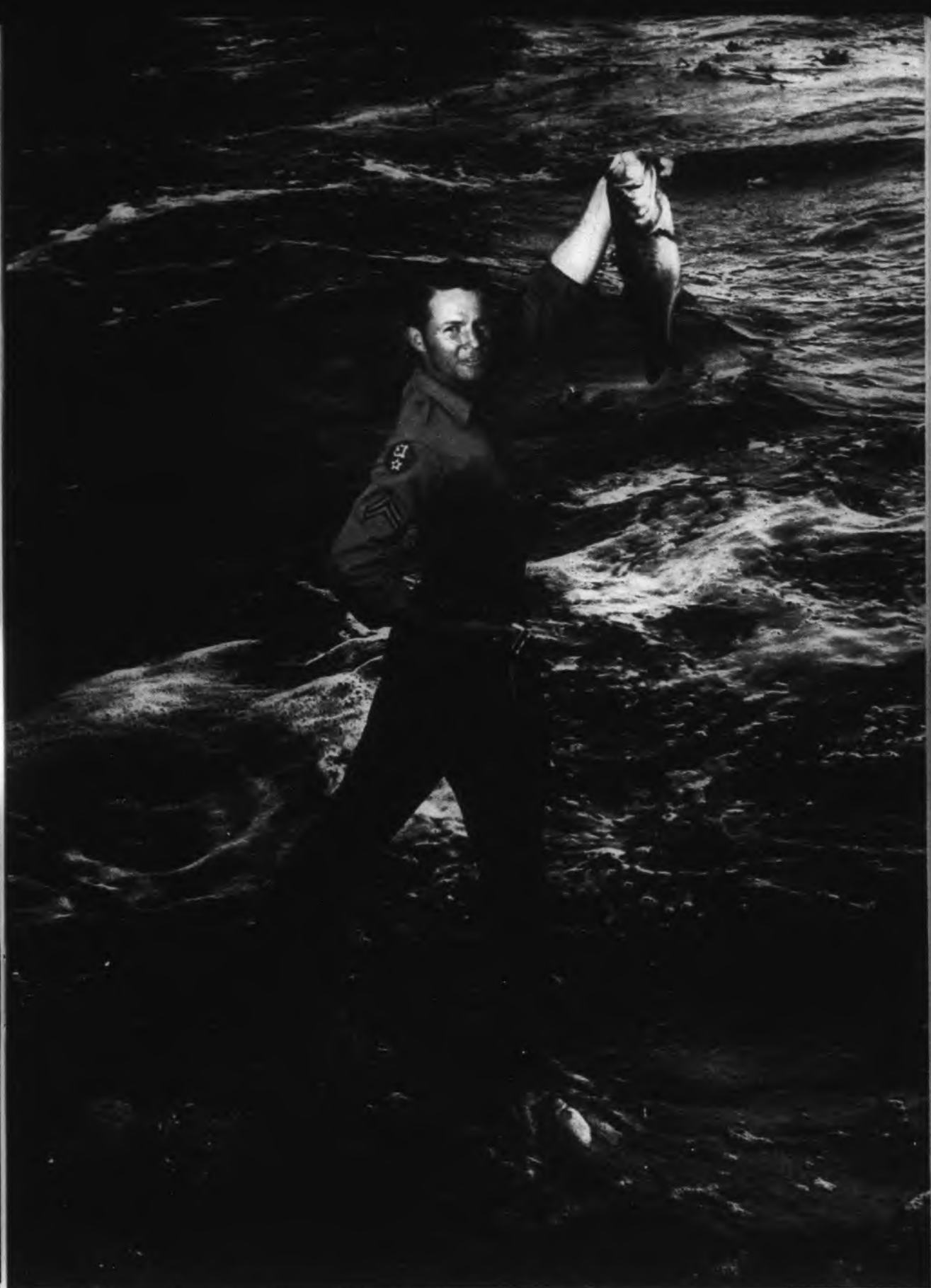
The end of a perfect day for these two boys and
their dog.



TOP Fishing for bream on the banks of the beautiful Ochlockonee River.

BOTTOM One of Florida's big bass bites off more than he can chew.





This big, bronze beauty was hooked along the shores of Lake Okeechobee, great-grandpappy of Florida lakes.



A typical South Florida bobwhite. The quail is Florida's foremost game bird.

Hunting plantation style in the Old South atmosphere of North Florida.



accompanied by a fisheries technician or biologist are now operating in Lake Okeechobee for the purpose of gathering information on the fish population and controlling rough fish. Preliminary studies have shown that wire traps and pound nets are used under certain conditions do not have a harmful effect upon the game fish population. These are now being used under a permit system. A large scale fish tagging program is expected to start early in 1949.

Rough Fish Control Studies

A complete unit has recently been set up and is now operating under this title. It has long been desirable to find the effect of competition from so-called rough fish on the game fish populations in many of our waters. The aims of this work are many fold:

1. To remove as many undesirable rough fish from our waters as possible.
2. To make food habit studies of both rough fish and game fish to determine their place in the fish population.
3. To make comparative studies of fish populations in different bodies of water to determine relative amounts of various species present and to apply corrective measures if possible.
4. To obtain accurate data on life history, age and growth, reproduction and other biological activities of our native fishes.

It is expected that this work will expand in the future and will eventually cover most of the larger fishing waters in the state. Lakes in which preliminary work has been done so far include:

Name of Waters	County	Name of Waters	County
Lake Beauclair	Lake	Newnan's Lake	Alachua
Lake Dora	Lake	Lake Tohopekaliga	Osceola
Lake Eustis	Lake	Lake Apopka	Lake and Orange
Lake Harris	Lake	Lake Istokpoga	Highlands
Lake Griffin	Lake		

Miscellaneous Biological Activities

A. TAGGING:

Over 3500 game fish and a number of catfish have been tagged in different waters throughout the state. These fish have been tagged in most cases on the upper left jaw with a Monel metal tag. Each fish is weighed and measured and each tag has a different number. Fishermen have been requested to return tags from all tagged fish caught in order that we may learn more of the migration, growth and abundance of our game fishes. Posters have been placed in conspicuous locations around the waters in which tagged fish have been released. Waters in which

tagged fish have been released are: Lake Dora, Lake Eustis, Lake Beauclair, Lake Griffin, Dead Lakes, Oklawaha River, Lake George, Lake Apopka, Lake Maggiore in Pinellas County, Lake Silver in Polk County.

Early results from our fish tagging indicate that only a small percentage of the available adult fish population is being taken by the sport fishermen. No definite conclusions have been arrived at from these studies up to the present time.

B. INDIVIDUAL LAKE STUDIES:

In addition to the lakes mentioned above, a number of smaller lakes have been surveyed and recommendations made for management. These lakes are too numerous to list here, but include several in Duval, Orange, Lake, Polk, Pinellas, Alachua, Leon, Citrus, Sarasota and other counties:

C. COOPERATION WITH FEDERAL AGENCIES:

The Fish Management Department has also participated in a number of activities with various agencies of the Federal Government. Close cooperation has been had with the Soil Conservation Service in the management of smaller lakes and ponds. The Department also has worked with representatives of the U. S. Fish and Wildlife Service in making fish and wildlife surveys for the south Florida water control program, the Jim Woodruff Dam and others.

D. POLLUTION INVESTIGATIONS:

The Department has made a number of investigations of pollution reports in various parts of the state and has cooperated with other state agencies on several pollution studies. In several cases it has been possible to minimize pollution of streams through the cooperation of the offender. Studies are at present under way to determine how pollution may be avoided from the pulp and paper industries and the phosphate mining industry.

E. WEED CONTROL:

Control of hyacinths is a necessary part of fish management in Florida. The department's activities in this field have been limited (with a few local exceptions) to testing the toxicity of several types of chemical hyacinth killers, and advising clubs and other organizations on this work. The butyl ester of 2,4 Dichlorophenoxyacetic acid (2-4D) was found to have no apparent effect on bass, bream and catfish in amounts sufficient to kill hyacinths. (Fig. No. 10) It is recommended, however, that spraying be limited to fall and winter in order to avoid oxygen depletion of the waters brought about by the rapid decomposition of the hyacinths in warm weather.

DISTRIBUTION OF FISH BY COUNTIES

District	Winter Haven	Blackwater	Wewahitchka	Welaka	Totals
1st	207,500				207,500
2nd	42,000	802,500			844,500
3rd		2,993,500	280,600	40,000	3,314,100
4th	31,000				31,000
5th	261,500				261,500
TOTALS	542,000	3,796,000	280,600	40,000	4,658,600

1948 SEASON

District	Winter Haven	Blackwater	Wewahitchka	Totals
1st	204,000			204,000
2nd	56,500	182,000		238,500
3rd		3,987,200	136,300	4,123,500
4th	8,000			8,000
5th	124,900	20,000		144,900
TOTALS	393,400	4,189,200	136,300	4,718,900

	1946	1947	1948
Total No. Fish Distributed	4,508,975	4,658,600	4,718,900
Total No. of Waters Stocked	129	194	171

FISH DISTRIBUTION BY HATCHERY AND COUNTY

	1947		1948	
	Bass	Bream	Bass	Bream
Alachua				25,000
Baker				
Bay		115,000		373,000
Bradford	11,000	100,000	6,000	
Brevard	8,000			
Broward	8,000		4,000	4,000
Calhoun			1,000	16,000
Charlotte				
Citrus	41,500		20,000	
Clay	13,000		29,000	35,000
Collier	15,000			
Columbia	10,000	90,000		18,000
Dade				
DeSoto		6,000		
Dixie				
Duval		125,000	12,000	28,000
Escambia		462,000	800	1,353,000
Flagler				
Gadsden		355,000		169,200
Gilchrist				
Glades				
Gulf	50,000	200,000*		100,000
Hamilton				
Hardee				
Hendry				
Hernando				
Highlands	11,000		44,000	
Hillsborough	45,000		36,000	
Holmes		220,000	500	
Indian River				

FISH DISTRIBUTION BY HATCHERY AND COUNTY

	Bass	Bream	Bass	Bream
Jackson	20,000	694,000	.....	410,500
Jefferson .....	.....	220,000	75,000	232,000
Lafayette	8,000	.....	.....	.....
Lake	31,500	.....	2,000	.....
Lee .....	.....	.....	.....	.....
Leon .....	.....	30,600	.....	110,000
Levy .....	.....	70,000	.....	40,000
Liberty .....	.....	.....	.....	.....
Madison .....	.....	118,000	8,000	.....
Manatee	16,000	.....	.....	.....
Marion	33,500	32,000	17,000	.....
Martin .....	.....	.....	.....	.....
Monroe .....	.....	.....	.....	.....
Nassau .....	.....	70,000	.....	.....
Okaloosa .....	.....	146,000	.....	430,000
Okeechobee .....	.....	.....	.....	.....
Orange	30,000	.....	20,000	.....
Osceola	12,000	.....	7,600	.....
Palm Beach	8,000	.....	.....	.....
Pasco	14,500	6,000	5,000	.....
Pinellas	13,000	.....	.....	.....
Polk	89,000	7,000	85,500	33,500
Putnam .....	.....	.....	16,000	20,000
St. Johns	26,500	.....	.....	.....
St. Lucie .....	.....	.....	.....	.....
Santa Rosa	15,000	580,000	.....	574,000
Sarasota .....	.....	.....	.....	.....
Seminole	21,500	.....	3,000	.....
Sumter	22,000	.....	23,000	.....
Suwannee .....	.....	121,000	.....	.....
Taylor .....	.....	40,000	.....	18 000
Union .....	.....	.....	1,500	18,000
Volusia	3,000	.....	16,300	.....
Wakulla .....	.....	.....	.....	.....
Walton	5,000	180,000	1,000	.....
Washington .....	.....	.....	.....	252,500
TOTAL	587,000	4,071,600	434,000	4,244,700

*Some crappie included with bream.

Results of Initial Fisheries Investigations

A. CLOSED SEASONS

Since the fall of 1946, the regulations concerning the taking of fresh water game fish by sport fishermen have been under analysis. In January, 1948, recommendations were made to the Commission that a closed season on fresh water fish was unnecessary in Florida, for the following reasons:

1. Research in Florida and other southern states has proven that it is not necessary that all adult fish spawn in order to insure reproduction. A single pair of bass reproduce enough young to adequately stock 60-600 acres of water. A pair of bluegills or shellcrackers spawn enough to supply 10-170 acres. Ponds and lakes subjected to extremely heaving fishing pressure during "spawning seasons" have continued to produce huge crops of young fish over many years.
2. Tagging studies in Florida and other southern states show that the sport fisherman is catching only from 2 to 25% of the available game fish populations. The remaining 75 to 97% apparently die without ever being taken by a fisherman.
3. In order to be effective, a "closed season" in Florida would have to cover at least 5 months of the year. Bass spawned almost continuously at the Winter Haven Hatchery during the period from December, 1946 to May 1947. Other observations have noted mature roe in female bass and spawning activities almost every month of the year, with the possible exceptions of late July and August. Bluegills and shellcrackers spawned continuously in western Florida from April to October in hatchery ponds and in lakes open to fishing. Bass and bream have spawned successfully in Florida lakes during open seasons in the past and there is no reason to believe that they will not continue to do so in the future.
4. Further experiments have shown that even heavy hook and line fishing cannot damage a fish population, although it may make poor fishing temporarily.
5. It has been found that a body of water will only produce a definite **weight** of fish of given species, in much the same way that a pasture will support a definite weight of livestock. Removal of certain **numbers** of fish allows the remaining individuals to grow faster, as growth of our warm water game fishes is dependent upon the amount of food available.

On the basis of this evidence, the Commission eliminated the closed season in all but 10 counties in western Florida. In October 1948, after further evidence was at hand, the closed season

was abandoned, except for Dead Lakes in Gulf and Calhoun Counties, Lake Wimico in Gulf County and Merritt's Pond and Ochessee Pond in Jackson County.

B. SIZE LIMITS:

Another regulation restricting success of sports fishermen was the 12-inch size limit on black bass. This too was subjected to careful analysis and found unnecessary as a conservation measure in Florida. No biologically sound reasons were found for its continuance, and a number of sound facts indicated its removal. These reasons were:

1. The results of the tagging studies mentioned above, showing that only a small percentage of the available game fish were being caught.
2. Experiments conducted at the Alabama Agricultural Experiment Station found that from 75-95% of bass and bream hooked deeply enough to draw blood died within two weeks after being carefully released.
3. A number of ponds and lakes in Florida were found to be overcrowded with bass; i.e., having so many individual bass that the available food supply would not allow any to reach "legal" size, and the restriction kept fishermen from relieving the overcrowded condition.
4. It is not necessary for bass in Florida to reach a length of 12 inches before spawning. One-year-old bass 8-10 inches long spawned successfully in hatchery ponds this year. Biologists in Alabama found that bass would spawn there at one year if they weighed 6 ounces or over.
5. Evidence gathered from preliminary studies of our fish populations indicates that competition for food, and not reproduction, is the chief limiting factor affecting our game fishes.
6. There appears to be a new race of black bass, closely related to the smallmouth in a number of north Florida streams which do not reach a large size, and although reports have indicated a maximum size of 3 pounds for this bass, the average size is about 10-11 inches.

C. EFFECTS OF COMMERCIAL FISHING

The effects of various types of commercial fishing gear on game fish populations have been studied. This work has been carried on in Lake Okeechobee, Lake George and the St. Johns River, Lake Istokpoga and a few other waters.

The studies completed to date are those made in the St. Johns River during February, March and April, 1948, on wire traps, pound nets, and short haul seines used during the shad and herring runs. The results of these studies are summarized here.



Fish for fairs and exhibits are furnished by the Fish Management Division.

WIRE CATFISH TRAPS

One series of 50 wire catfish traps was used for a total of 1,930 trap days (one trap in water for 24 hours constitutes one trap day). This is equivalent to keeping one trap under observation for over 5 years. This series of traps was baited with herring and other rough fish, as is done in normal trapping operations. The results were as follows:

Total catfish taken	5,225 lbs.
Total game fish	359 lbs. or 6.4% of all fish
Average catfish per trap day	2.7 lbs.
Average game fish per trap day	0.18 lbs.
Average No. game fish per trap day	1.6 fish

During the trapping experiment, three small bream were found dead. Game fish taken included Bluegill, Shellcracker, Redbreast, and Crappie. No bass were taken. In view of the evidence that less than 7% of the catch, amounting to 1.6 game fish was taken from each trap each day, and the extremely low mortality of the game fish, it is not felt that the use of wire catfish traps baited with herring and rough fish is detrimental to the supply of game fish in the St. Johns River.

Another series of wire traps was baited with cut bluegill and crappie for 52 trap days to determine whether this bait would effectively catch catfish. The results are as follows:

Total catfish taken	2.55 lbs.
Total game fish taken	6.86 lbs.
Average catfish per trap day	0.05 lbs.
Average game fish per trap day	0.13 lbs.
Average No. game fish per trap day	0.36 fish



These hatchery-raised fingerlings are being collected for release in an under-populated lake or stream.

Comparison of the catches of the two series of traps proves definitely that wire traps baited with cut bluegill and crappie are not effective in catching catfish or game fish. The commercial fisherman, like the sport fisherman, must use the best possible bait for a successful catch. The opinion (expressed by many sportsmen) that trap fishermen use game fish to bait their traps does not appear to be valid in the face of the evidence given above, which shows that the rough fish bait produces more than 50 times as much catfish as does game fish bait.

POUND NETS

A series of five pound nets was used for a total of 88 net days, baited with herring and rough fish.

Total catfish taken	4,688 lbs.
Total game fish taken	276 lbs. or 6.9% of all fish
Average catfish per net day	53.27 lbs.
Average game fish per net day	3.13 lbs.
Average No. Game fish per net day	6.48 fish

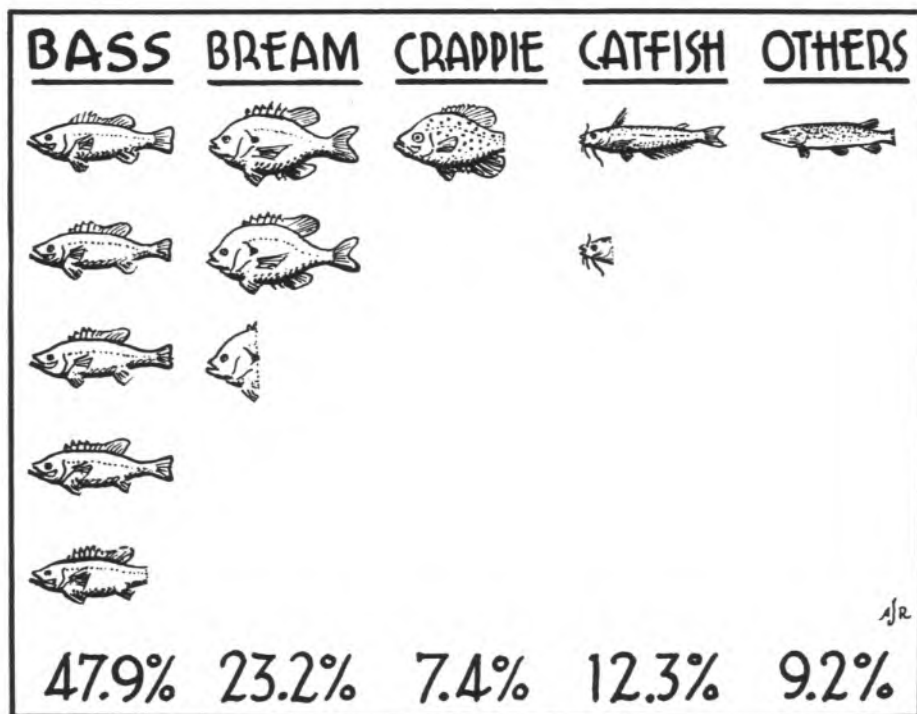
All game fish, including one black bass were returned to the water alive. Again the game fish amounted to less than 7% of the catch, and it was demonstrated that all game fish could be released alive. On this evidence, it is not considered that the use of pound nets is detrimental to the supply of game fish in the St. Johns River.

SHAD AND HERRING SEINE OPERATIONS

Seventeen shad and herring seine hauls were observed and the catch recorded as follows:

	Total Catch	Percent of Total
Non-game fish (includes white shad, herring, catfish, gizzard shad and gar- fish)	1,601 lbs.	95.0%
Game fish (includes bluegill, red breast, shellcracker and crappie)	84 lbs.	5.0%

As these seine hauls are made in swift waters not usually inhabited by game fish, the low catch of game fish was to be expected. No bass were taken in these operations. As all game fish can easily be returned alive, it is not felt that shad and herring seine hauls as now operated will be detrimental to the supply of game fish in the St. Johns River.



The above chart shows the percentage breakdown of fish taken by Florida's fresh water anglers.

Sports Fishing Catch Records

At the end of the fiscal years 1946-47 and 1947-48, questionnaires were distributed to license-buying fishermen, requesting that they report their catch for that year. Returns were received from almost every county in the state. The catch records given here are based on these returns.

FISH CAUGHT BY LICENSED FISHERMEN

Species	Year ending June 30, 1947	Year ending June 30, 1948
Bass	11,240,928	22,226,629
Bream	6,516,669	7,584,149
Crappie	1,498,948	4,117,311
Catfish	3,970,749	2,913,369
Other	3,005,124	2,985,700
Total	26,232,418	39,737,158
No. of fishing trips	3,970,054	5,042,987

AVERAGE LICENSED FISHERMAN'S CATCH

Species	Year ending June 30, 1947	Year ending June 30, 1948
Bass	79.8	78.1
Bream	41.4	35.4
Crappie	8.9	14.8
Catfish	28.7	13.0
Others	20.5	10.5
Total	179.3	151.8
No. of Trips	23.8	22.6

While these figures may not be statistically accurate, it is believed that they give a fairly reliable representation of the catch by licensed fishermen. They do indicate that the number of fishermen is increasing steadily, and that the average individual fisherman fared better in 1947 than he did in 1948, while the total catch of all fishermen increased in 1948.

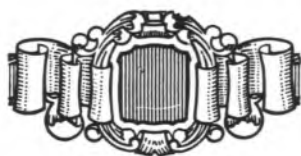
Unfortunately, no method has yet been found to estimate the number of unlicensed fishermen nor their catch for the year. If this data could be obtained the total catch would undoubtedly be greatly increased, possibly doubled.

SCIENTIFIC PUBLICATIONS

Several papers have been published contributing to knowledge of the scientific management of fresh-water fish in Florida. Some of these are available in mimeographed form, and are listed below.

1. **A Preliminary Report on catches by Wire Traps, Pound Nets, and Shad and Herring Haul Seines in the St. Johns River (Condensed).**
2. **Florida's Fresh-Water Fisheries Problems and Program.** Presented at the meeting of the American Fisheries Society at Atlantic City, N. J., September 14, 1948.
3. **Preliminary Studies on Adult Fish Populations in Some Large Florida Lakes.** Presented at the second annual Southeastern Fisheries and Wildlife Conference at Lexington, Kentucky, Nov. 2, 1948.

LAW ENFORCEMENT DIVISION



JOHN SWIFT *Chief, First District*
LESTER MIKELL *Chief, Second District*
FRANCIS VILLAR *Chief, Third District*
CURTIS WRIGHT *Chief, Fourth District*
C. J. FINLEY *Chief, Fifth District*

LAW ENFORCEMENT

PERHAPS the most important branch of the Game and Fresh Water Fish Commission is the law enforcement division. The men of this division are charged with upholding game and fish laws in all of Florida's 67 counties. It is their duty to guard 39,000,000 acres of woods and waters. Even with the present record size of the division, each wildlife officer is responsible for an average of 170,000 acres. Taking into consideration the difficult terrain that makes up Florida, it is easy to see the mammoth task faced by the commission's officers. The commission has made a great deal of progress in all fields, but some of its most notable steps have been taken in the field of law enforcement. In January 1947, the commission employed 171 officers. Today it employs 228 plus 2 special investigators. Two years ago these men operated with very meager equipment. All used their own cars, many of which were in bad state of repair. There was a shortage of boats, a shortage of marsh buggies, and virtually none of the equipment which was on hand was in tip-top condition. Today these men operate with a total of 124 state-owned jeeps or jeep trucks, 160 outboard motor boats, 150 horse and boat trailers, 4 air-propelled boats, 9 power boats and 2 airplanes.

The caliber of the men has improved along with the size of the force. The deadwood has, in most instances, been weeded out of the ranks. Many men, it was found, were not qualified to perform the duties of a wildlife officer. Many had received their jobs solely through political patronage and made no effort to earn the salaries they received. Such men were discharged. They were replaced by younger men who not only knew the woods but possessed the intelligence and integrity necessary to do a good enforcement job. To attract such men, salaries have been raised. In January 1947, the average salary for wildlife officers was \$123.00 a month. Today it is \$166.00.

Operating Budget

This expansion, of course, has entailed a considerably increased budget. During the current fiscal year, more than 57 per cent of the commission's total operating budget will be devoted to law enforcement. In dollars and cents the amount will total \$846,911.00. This is apportioned to the various districts for salaries, maintenance, and the acquisition of equipment. Below is a breakdown of the current budget by districts:



A "flying warden" poses beside his plane. The Commission now operates two observation planes in the Okeechobee-Glades area. Ultimately it plans to have a plane operating in each district.

ENFORCEMENT BUDGET BY DISTRICTS

DISTRICT	NUMBER OF OFFICERS	OPERATING BUDGET
First	50	\$169,862.62
Second	55	\$175,000.00
Third	51	\$196,609.37
Fourth	26	\$134,189.05
Fifth	46	\$171,250.00
TOTAL	228	\$846,911.04

Administration and Personnel

The law enforcement division is under the direct supervision of the commission director. Each district, in turn, is supervised by a chief wildlife officer and an assistant. These men work closely with the director and the district commissioner. A tentative plan for the future has been outlined whereby a rank system will be instituted. The proposed system, which it is hoped will be put into effect within the next year, would provide in addition to district chiefs such sub-ranks as captains, lieutenants and sergeants, each having direct supervision over a given number of men.

In past years, wildlife officers carried no mark of distinction other than a badge. In 1947, however, the commission supplied each man on the force with two attractive dress uniforms complete with insignia. Men still work in the field without uniforms. However, they are required to be properly uniformed when appearing in court or taking part in any other public meeting. The acquisition of uniforms has not only added dignity to the enforcement branch but has been a very noticeable morale booster for the men themselves.

Arrests and Convictions

As the size of the force increased and its efficiency improved, arrests and convictions of game law violations mounted. During the past two years a total of 5,357 persons were apprehended for game and fish law violations. Of these some 91 per cent were convicted in court. The remainder were either acquitted or their cases nolle prossed. This conviction record is slightly above average of other southern states. However, it is lower than in many of the northern states where unified conservation programs have been in effect for years.

Fishing violations accounted for the greatest number of arrests. About 68 per cent of all cases dealt with non-observance of fresh water fishing rules. Slightly over 30 per cent were for infraction of game laws. The remaining arrests were made for miscellaneous offenses. Fishing without a license was the greatest single offense; 1,994 persons were arrested for failure to have fresh water fishing licenses. Hunting without a license accounted for 323 arrests. Taking game during the closed season was responsible for 221 cases. Other oft-committed offenses were possession of undersize fish (a rule that has now been abolished), exceeding the bag limit on fish, fishing in closed season, fishing with nets, fishing with too many poles, hunting during the closed season, shooting from state roads, hunting on closed days, and possession of a gun and dog in a closed area. Below is a list of the offenses and the number of arrests for each:

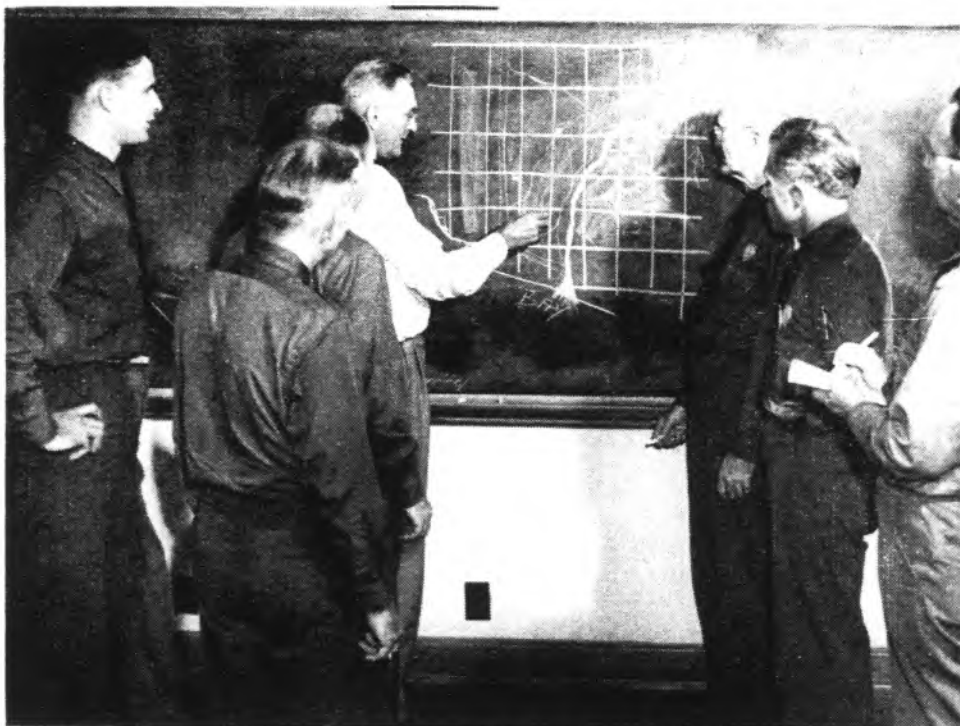
GAME AND FISH LAW VIOLATIONS

Fishing without a license	1994
Possession of undersized fish	614
Exceeding bag limit on fish	331
Hunting without a license	323
Taking game closed season	221
Hunting closed season	172
Hunting closed day	153
Fishing with cast nets & possession of seines	145
Shooting from and across Road No. 26, 25, 84, 41, 94, 27	131
Fishing with too many poles	123
Fishing closed season	120
Possession of gun and dog, closed area	111
Hunting unplugged gun	104
Fishing with traps and baskets	92
Hunting closed area	88
Hunting with light	85
Gigging fish	55
Shooting fish	50
Attempting to take and taking doe deer	44
Taking dove in baited area	36
Fishing closed waters	31
Attempting to take non-game birds	30
Selling game fish	28
Fishing closed area	27
Taking deer closed season	23
Possession alligator hides closed season	22
Shooting ducks, marsh hens, from motor boat	21
Exceeding bag limit on marsh hens, coots, quail, squirrel, and ducks	21

Possession of fur bearing animals closed season	21
Dynamiting fish	13
Fishing with goldfish and bream for bait	11
Taking undersize alligators	11
Fishing with more than 25 hooks on trotline	9
Taking alligators closed season	9
Trapping closed season	8
Hunting after sunset	7
Molesting game	7
Trapping without a license	5
Offering to sell fresh water fish	4
Fishing commercially without a license	4
Securing license under false pretense	4
Trapping quail	4
Transporting fish	3
Renting boats without a license	3
Possession alligator closed area	3
Selling bait without a license	2
Attempting to take fish with light	2
Placing lime in water to kill fish	2
Taking turkey hens	2
Shipping game out of state	2
Removing sex identification of deer	2
Failing check deer before leaving Ocala National Forest	2
Entering forest without a permit	2
Sale of undersized alligator hides	1
Selling hides and furs without a license	1
Trapping closed area	1
Killing pheasants	1
Guiding without a license	1
Hunting improper license	1
Fire hunting	1
Shooting quail on ground	1
Carrying rifle without a permit	1
Possession of gun in boat	1
Buying fresh water fish	1
Lending fishing license	1
Attempting to buy bass	1
Transferring and altering license	1
Fishing for bass with trotline	1
Resisting arrest	1
Total	5357

Equipment

Perhaps the most important single step in improving the efficiency of the law enforcement division was the acquisition of superior equipment. In the past many officers were forced to operate boats which could not compare with speed boats employed by violators. All used their own automobiles, which in many instances were not equipped to travel on rough woods trails. There were not enough swamp buggies to patrol the Glades. In fact, in the more remote regions of the State there was no method of performing efficient patrol duty. To correct this situation, the commission last year purchased two observation planes. The patrol aircraft are stationed at Plant City and Ft. Pierce. They do daily duty over the impenetrable marshlands which



Wildlife Officers receive instructions at this year's Gainesville school. The commission hopes to instigate a regular six-week training school for its wardens.

cover that section of the state. To facilitate the enforcement problem even further, a statewide communications network is now underway. Sites for 25 automatic and manual relay stations have been established throughout the state. Jeeps, airplanes, and marsh buggies will be equipped with these two-way radios. With this set-up, airborne wildlife officers who spot suspicious activities from the air will be able to radio information to ground vehicles in 100-mile area. This should go a long way toward correcting what has long been a rugged enforcement situation.

School for Wardens

In addition to their routine enforcement duties, wildlife officers are also encouraged to attend sportsmen's club meetings and deliver short talks to student and civic groups. The officer force is regarded as the commission's frontier of public relations. To better equip the men for all their duties, regular annual schools for wardens have been instituted. In 1947 two 3-day schools were held in Tallahassee and Orlando. In 1948 a 6-day short course for the officers was held at the University of Florida. The instructors at the session included college professors, wildlife specialists, public relations specialists and well-known law enforcement officers. The course included

such subjects as necessary qualifications for wildlife officers, legal powers of the officers, court room demeanor, wildlife management, arrest procedure, preparation of cases, fish management problems, public relations and other important phases of game warden work. At the end of the course, the men were given written examinations on the subject matter. The grade average on the tests was in the low 90's and nearly 25 per cent received perfect scores.

Even more elaborate plans are being made for this year's school. Under present plans the course will be lengthened and given to smaller groups. It is hoped that instructors in many phases will be supplied by the University of Florida and its general extension service.

Wildlife officers are on duty 24 hours a day, 7 days a week. The only "days off" they actually receive are two weeks annual vacation. The men actually average 10 to 18 working hours a day. They are required to submit an arrest, a conviction and a general activities report to the commission once a week.

As of December 31, 1948, Florida claimed the largest conservation enforcement staff in the South. With newer and more streamlined plans, improved equipment, and higher salaries, it is hoped that the staff may also soon become the most efficient.

ARREST REPORT FOR BIENNIUM

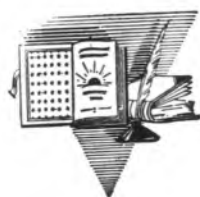
	Total Arrests	Convictions	Acquittals	Pending
Alachua	93	80	11	2
Baker	30	25	5	....
Bay	32	31	1	....
Bradford	20	20	....	....
Brevard	61	58	3	....
Broward	294	283	8	3
Calhoun	82	50	23	9
Charlotte	41	31	9	1
Citrus	56	55	....	1
Clay	35	18	14	3
Collier	62	55	7	....
Columbia	28	24	4	....
Dade	123	116	6	1
DeSoto	43	22	21	....
Dixie	87	66	16	....
Duval	151	116	23	12
Escambia	49	48	1	....
Flagler	51	49	2	....
Franklin	53	52	1	....
Gadsden	62	58	1	3
Gilchrist	24	22	2	....
Glades	81	65	11	5
Gulf	132	103	24	5
Hamilton	22	21	1	....
Hardee	34	29	3	2
Hendry	58	48	10	....
Hernando	70	68	2	10
Highlands	72	53	9	10
Hillsborough	120	114	3	3
Holmes	46	41	4	1

ARREST REPORT FOR BIENNIUM

Indian River	4	4	....	....
Jackson	145	126	18	1
Jefferson	29	25	4	....
Lafayette	43	35	1	7
Lake	97	86	7	4
Lee	100	82	17	1
Leon	96	75	16	5
Levy	77	70	7	....
Liberty	286	270	13	3
Madison	34	29	3	2
Manatee	33	30	2	1
Marion	99	90	9	....
Martin	39	37	2	....
Monroe	18	17	1	....
Nassau	289	282	5	2
Okaloosa	80	74	5	1
Okeechobee	19	15	4	....
Orange	71	66	5	....
Osceola	30	24	4	2
Palm Beach	68	58	9	1
Pasco	88	79	9	....
Pinellas	71	71	....	....
Polk	298	274	23	1
Putnam	23	21	1	1
St. Johns	200	193	7	....
St. Lucie	20	20	....	....
Santa Rosa	141	135	6	....
Sarasota	59	59	....	....
Seminole	57	55	....	2
Sumter	67	67	....	....
Suwannee	53	52	....	1
Taylor	95	73	22	....
Union	13	13	....	....
Volusia	181	175	5	1
Wakula	77	72	5	....
Walton	56	47	6	3
Washington	94	82	12	....
TOTAL	5357	4804	453	100



INFORMATION AND EDUCATION DIVISION



WILLIAM W. WEEKS
Director, Information-Education

INFORMATION—EDUCATION

THE primary function of the Division of Information and Education is to enlighten the people of Florida to the crying need for wildlife conservation. It has been said that no law or program can survive without the understanding and cooperation of the people. This is particularly true in the administration of a conservation program. The benefits of conservation are somewhat intangible; consequently, the people are prone to take the matter lightly. The problem of correcting this general attitude rests largely on this division.

The division has two lesser functions, but they are more or less by-products of our main objective. One of these lesser functions is to keep the citizens of the state informed on the activities of their wildlife agency. The other is to foster as much out-of-state interest in our outdoor resources as possible with our limited information set-up.

At present the division has seven employees—four of whom are permanent and three temporary. This is exclusive of the administrator of public relations whose objectives fit under the division's program but who is administratively separate. The four permanent employees in the division are: Director—who supervises the overall program, including press releases, preparation of literature, publication of the magazine, visual education, production of movies, booking of lecturers and staging of exhibitions and special conservation promotion events.

Assistant director—serves as a general deputy to the director, plus the handling of writing assignments on press releases and publications.

Photographer—takes pictures of wildlife and commission activities for press distribution and use in our own publication. Secretary and circulation manager—handles the secretarial duties of the office and serves as circulation clerk for our monthly magazine.

On temporary status are a lecturer and exhibitionist who makes conservation speeches before clubs, classrooms and civic organizations throughout the state; a movie cameraman who is doing the photography for a movie now in production; and a typist who serves as a circulation assistant during the heavy winter influx of subscription requests for the commission magazine.

The division itself was created in May, 1947. Prior to that time, the commission had employed one man who edited its house organ and

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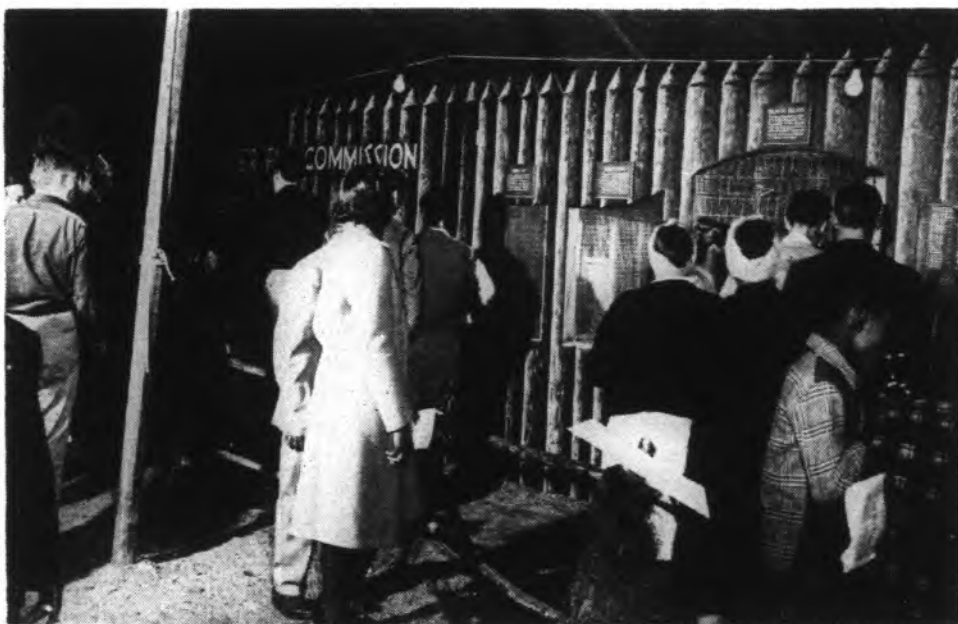
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A crowd views the commission's new 50-foot portable exhibit. More than 1,500,000 persons viewed its fair displays during the 1948 season.

did some publicity work. During the fiscal year of 1947-48 the new division was given an operating budget of \$39,000. The figure was raised to \$53,000 for the fiscal year of 1948-49.

This represents slightly over 3.5 percent of the total operating budget, a proportion that is a little above the average for most southern states. However, it compares rather poorly with the seven to twelve percent share allotted for information and education by many northern conservation agencies. Under the present budget, some \$20,000 will go for the publication of our new magazine, *FLORIDA WILDLIFE*, which is distributed without charge. The remainder will be spent on the building and maintenance of film libraries, preparation of game and fish literature, dissemination of press and radio material, salaries and travel expenses.

Information and Publicity

Public information is probably the most important single item in selling the people on the needs for conservation. Obviously the best media for the dissemination of such information is through newspapers and radio. In the 20 months since the inception of the Information and Education Division, 217 press releases have been prepared and distributed. By actual clipping return, these releases resulted in 16,400 stories in 157 daily and weekly newspapers in Florida. The returned clippings of news stories on the state's conservation activities would fill 75 editions of an average-sized newspaper.



Entrance to the Game and Fresh Water Fish Commission exhibit at last year's Pensacola Fair.

The state's conservation program and its hunting and fishing resources have also received considerable national publicity. Numerous feature stories and pictures have gone out on the wires of the Associated Press and the United Press, and, in addition, feature stories and pictures of Florida's hunting and fishing have appeared in such national magazines as *SPORTS AFIELD*, *OUTDOOR LIFE*, *FIELD AND STREAM*, *OUTDOORS*, *HUNTING & FISHING MAGAZINE*, *THE OUTDOORSMAN* and *OUTDOOR SPORTSMAN*.

Commission Magazine

When the Division of Information and Education was set up, the commission published a small-sized monthly organ called *FLORIDA GAME AND FISH*. It had a circulation of slightly over 1,400. This publication was dropped and a new monthly magazine, *FLORIDA WILDLIFE*, was launched when the division was established. The new publication was a regular sized magazine employing the use of color to add to its attractiveness. The magazine was completely redesigned and its editorial content revamped. The circulation of *FLORIDA WILDLIFE* is now more than 13,000 and is growing at the rate of nearly 1,000 a month. The magazine is distributed free of charge, but circulation is restricted as much as possible to those interested in wildlife conservation and the outdoors. Between 30 and 40 percent of the division's time and money now goes into the production of this magazine. The prime objective of the publication is to put across new and valuable conservation ideas and promote, generally, the wise use of our wildlife resources.

Movies

The commission now has a 16mm film library containing 16 titles, with as many as seven prints of some films. These are distributed on a loan basis to sportsmen clubs, classrooms, civic group, youth organizations and out-of-state audiences.

Commission movies have been shown to 790 audiences totaling 94,800 people during the past 20 months. Of these, 31,000 were classroom students.

The commission now has in production a movie of its own with a conservation theme designed specifically for Florida audiences. It will be released sometime in the spring.

Lectures on Conservation

The commission now has two lecturers, including Dr. I. N. Kennedy, Administrator of Public Relations, who devotes their full time to this important phase. In addition, other members of the commission personnel including the director and department heads are on call for appearances before clubs and organizations.

During the biennium, commission speakers have appeared before a total of 327 different groups. These included 133 schools, 114 civic organizations, 57 sportsmen clubs and 23 miscellaneous clubs. The total audience was estimated at well over 40,000.

Packaging the commission's monthly magazine, FLORIDA WILDLIFE. The magazine goes to more than 13,000 subscribers in and out of state.



Literature

The Information and Education section has filled more than 38,000 requests for literature since it was set up. Thousands of additional requests had to be turned down because we were unable to supply the demand.

The division prepared eight new pieces of literature during this period and now has two more in the production stage. These booklets and brochures cover various subjects on game and fish and their management.

Exhibits

One of the most expanded functions of the Information and Education Division is the staging of wildlife exhibits at fairs and other special events. During 1947-48 the commission supplied 14 fairs throughout the state with live exhibits. These exhibits were viewed by an estimated 1,500,000 people.

This year a new portable game and fish exhibit was designed and built to cut down cost and simplify transportation and assembly. The new exhibit was on display at seven county and regional fairs during the fall of 1948. It is already scheduled for 23 fairs and expositions during the next calendar year.

The fish for these exhibits are supplied by the Fish Management Department, and the wild native animals are usually furnished by wardens of the law enforcement branch.

Special Promotion

Several special events designed to promote interest in wildlife and the outdoors have been inaugurated by the division. Last year one entire day was set aside at the Florida State Fair as Wildlife Conservation Day. The commission in cooperation with the Florida Forest Service and fishing tackle and firearm manufacturers produced a special one-hour show in front of the fair grandstand to draw attention to the day. More than 11,000 people witnessed the show, and the idea was received with favor by both the fair officials and newspapers.

Perhaps the most successful promotion was the so-called "Fishathons" which the commission staged in four of Florida's major cities. These were handled on a cooperative basis with newspapers and conservation clubs in St. Petersburg, Tampa, Orlando and Miami. The Fishathons were simply giant fishing parties for kids in which the Game Commission stocked lakes with thousands of adult fish; then furnished poles, lines and bait for the youthful anglers. Prizes for catches were supplies by the newspapers and local business men. The commission and its co-sponsors entertained over 20,000 boys and girls during the four Fishathons.

ACCOUNTING DIVISION

BART PEADEN, JR., *Auditor*

THE Accounting Division is the bookkeeping division of the Game and Fresh Water Fish Commission. It is made up of an auditor and three employees. It is their duty to keep an accurate track of more than \$1,000,000 a year in receipts and disbursements. In addition, the Accounting Division is responsible for the printing and distribution of all licenses. It issues all commercial licenses and handles more than \$800,000 each year in license fees. The Division must also keep individual county records of all arrests and collect costs of same from each county. It audits and places in line for payment all just bills for equipment and labor. It acts as the payroll clerk for the nearly 300 employees of the Commission. At regular monthly intervals the auditor prepares a finance statement with disbursements broken down by departments and by districts.

The Division is responsible also for the preparation of regular and special budgets and all requests for purchase approvals. In its files are kept records of all equipment used by field forces and all supplies for the field men are mailed through the Accounting Division.

Receipts Increase

With the tremendous increase of receipts and disbursements over the past five years, more and more work, of course, has been piled on this Division. For instance, during the fiscal year of 1944-45 the Commission took in slightly under \$372,000. In 1945-46 this was stepped up to \$569,085. The receipts increased in 1946-47 to \$833,297. During the last fiscal year the Commission, for the first time in its history, collected slightly over a million dollars. This year, on the basis of receipts for the first 5 months, the estimated income will reach more than \$1,300,000. In other words, in a period of 5 years the revenue derived from the sale of hunting and fishing licenses, the collection of court costs and other sources has increased nearly a million dollars. During this fiscal year disbursements will run slightly over a million-and-a-half dollars, which is more than the anticipated income. Financially, however, the Commission's position is still very secure. On the basis of estimated income and estimated expenditure for this year the department will have a reserve balance of nearly \$400,000 at the beginning of the next fiscal year. The following pages contain a complete statement of Commission receipts and expenditures for the calendar years 1947-48.

GAME & FRESH WATER FISH COMMISSION **FINANCIAL STATEMENT FOR BIENNIUM JANUARY 1, 1947 TO DECEMBER 31, 1948**

	JANUARY 1 TO DECEMBER 31, 1947			JANUARY 1 TO DECEMBER 31, 1948		
	Item Total	Source Total	Total	Item Total	Source Total	Total
Available Balance, January 1.....			\$ 699,650.25			\$ 649,327.44
Warrants Cancelled and Restored to Balance.....						1,010.84
RECEIPTS, BY SOURCE						
Sale of Sporting Licenses						
Fishing.....	\$395,128.75			\$530,400.00		
Hunting.....	381,486.50			409,833.75		
Trapping.....	3,343.00			2,894.00		
Alien Hunting.....	100.00			100.00		
U.S. Permits.....	9,673.73	\$789,731.98		9,335.56	\$952,563.31	
Sale of Commercial Licenses						
Resident Commercial Fish Dealer...	\$ 7,075.00			\$ 11,595.00		
Resident Commercial Boat.....	1,092.70			1,934.20		
Non-Resident Fish Dealer.....	100.00			50.00		
Non-Resident Boat.....				10.00		
Wholesale Fish Dealer.....	1,400.00			2,300.00		
Boat for Hire.....	7,093.00			9,071.00		
Game Farm.....	190.00			155.00		
Guide.....	220.00			260.00		
Wholesale Fur Dealers and Agents...	840.00			1,160.00		
Local Fur Dealers or Buyers.....	70.00	18,080.70		70.00	26,605.20	

Other Sources

Court Costs Collected.....	20,982.82			24,894.57		
Miscellaneous Receipts.....	3,949.17			10,158.24		
Sale of Confiscated Materials.....	30.35			986.02		
Sale of Old Equipment.....	1,238.50			909.00		
Previous Years Licenses Collected...	2,884.00			5,021.00		
Pittman-Robertson.....	6,883.34			108,172.32		
Refunds.....	10.50			542.96		
Sale of Rough Fish.....				434.95		
Rent from Dark Room.....		35,978.68		120.00	151,239.06	
Total Receipts.....			\$ 843,791.36			\$ 1,130,407.57
			\$ 1,543,441.61			\$ 1,780,745.85

FINANCIAL STATEMENT—Continued

	JANUARY 1 TO DECEMBER 31, 1947			JANUARY 1 TO DECEMBER 31, 1948		
	Item Amount	Sub-Dept. Total	Department Total	Item Amount	Sub-Dept. Total	Department Total
DISBURSEMENTS BY DEPARTMENT AND PURPOSE						
Administration						
Salaries	\$ 15,997.91			\$ 19,619.90		
Travel	5,266.90			7,191.82		
Office Supplies	1,500.00			1,907.34		
Telephone and Telegraph	2,357.04			3,045.53		
Postage and Shipping	3,885.35			4,220.13		
Printing	11,684.64			13,581.13		
Heat, Water and Lights	25.00			335.56		
Equipment Purchased	3,766.71			3,979.60		
Maintenance of Equipment				27.90		
Gas, Oil, and Lubricants				61.00		
Miscellaneous	4,170.96			8,731.84		
Rent	300.00			279.84		
Taxes	2,232.39		\$ 51,486.90	1,091.09		\$ 64,072.68
Fiscal and Accounting (Auditing)						
Salaries	8,702.00			10,263.07		
Office Supplies	545.50			268.38		
Equipment Purchased	279.27			491.90		
Miscellaneous Expense	115.27		9,642.04	78.25		11,101.60

Law Enforcement

Salaries	283,881.15		378,283.84	
Travel	232,755.62		211,717.28	
Telegraph and Telephone	1,027.54		1,683.72	
Equipment Purchased	93,202.93		171,852.40	
Maintenance of Equipment	3,935.62		15,529.87	
Gas, Oil, and Lubricants	659.19		41,747.36	
Miscellaneous Expense	19,434.10		9,796.27	
Insurance	4,570.68		11,936.58	
Rewards Paid	1,032.40	640,499.23	250.00	842,797.32

Fishery Department**Fish Management Administration**

Salaries	5,206.61		7,277.46	
Travel	3,154.48		3,153.90	
Office Supplies			31.45	
Equipment Purchased	2,071.19		2,631.08	
Maintenance of Equipment			165.82	
Gas, Oil, and Lubricants			509.96	
Miscellaneous	631.71		991.64	
Insurance		11,063.99	142.22	14,903.53

Blackwater Hatchery

Salaries	4,961.33		4,740.21	
Travel			73.50	
Telephone and Telegraph			7.06	
Equipment Purchased	3,652.20			
Maintenance of Equipment			1,493.50	
Gas, Oil, and Lubricants	775.71		1,171.23	
Miscellaneous	1,172.47		1,082.96	
Insurance		10,561.71	125.50	8,693.96

FINANCIAL STATEMENT—Continued

	JANUARY 1 TO DECEMBER 31, 1947			JANUARY 1 TO DECEMBER 31, 1948		
	Item Amount	Sub-Dept. Total	Department Total	Item Amount	Sub-Dept. Total	Department Total
DISBURSEMENTS BY DEPARTMENT AND PURPOSE						
Fishery Department (Continued)						
Wewahitchka Hatchery						
Salaries.....	24.00			18.00		
Heat, Water, and Light.....				12.00		
Equipment Purchased.....	105.00			321.54		
Maintenance of Equipment.....	172.38			287.55		
Miscellaneous.....	268.73	570.11		370.85	1,009.94	
Winter Haven Hatchery						
Salaries.....	6,573.32			7,744.25		
Travel.....	507.03			569.59		
Heat, Water, and Light.....				70.32		
Equipment Purchased.....	3,159.49			2,173.07		
Maintenance of Equipment.....				279.27		
Gas, Oil, and Lubricants.....	1,583.27			1,334.91		
Miscellaneous.....	1,548.36			764.43		
Insurance.....		13,371.47		163.55	13,099.39	
Rough Fish Control Studies						
Salaries.....				1,233.35		
Travel.....				192.98		
Equipment.....				950.00		

Maintenance.....			264.50	
Gas, Oil, and Lubricants.....			28.43	
Miscellaneous.....			1,253.42	4,035.19
Insurance.....			112.50	
Maintenance Engineer				
Salaries.....	\$	610.50	\$ 2,348.87	
Travel.....		532.30	2,017.19	
Telephone and Telegraph.....			45.08	
Equipment Purchased.....		36.51	1,447.69	
Maintenance of Equipment.....			62.89	
Gas, Oil, and Lubricants.....			285.25	
Miscellaneous.....			55.66	
Insurance.....		1,179.31	122.99	6,385.62
Lake Okeechobee Survey				
Salaries.....			8,020.42	
Travel.....			2,082.59	
Equipment Purchased.....			4,773.89	
Maintenance of Equipment.....			64.30	
Gas, Oil, and Lubricants.....			275.72	
Miscellaneous.....			272.84	
Insurance.....			240.27	15,730.03
St. Johns River Survey				
Salaries.....		1,650.00	9,370.41	
Travel.....		506.18	1,233.50	
Equipment Purchased.....		1,180.82	4,231.42	
Maintenance of Equipment.....			106.40	
Gas, Oil, and Lubricants.....			392.74	
Miscellaneous.....			1,306.45	
Insurance.....		3,337.00	232.50	16,873.42

FINANCIAL STATEMENT—Continued

	JANUARY 1 TO DECEMBER 31, 1947			JANUARY 1 TO DECEMBER 31, 1948		
	Item Amount	Sub-Dept. Total	Department Total	Item Amount	Sub-Dept. Total	Department Total
DISBURSEMENTS BY DEPARTMENT AND PURPOSE						
Fishery Department (Continued)						
Statewide Survey						
Tagging Experiment.....	10.00			316.62		
Equipment.....				1,275.20		
Miscellaneous.....		10.00	40,093.59	57.93	1,649.75	82,380.83
Department of Education and Information						
Salaries.....	7,822.53			15,354.98		
Travel.....	1,648.05			3,784.18		
Office Supplies.....				105.40		
Postage and Shipping.....	969.40			91.97		
Printing.....	5,316.06			19,172.86		
Equipment Purchased.....	4,668.55			3,479.62		
Maintenance of Equipment.....				283.69		
Gas, Oil, and Lubricants.....				831.30		
Miscellaneous.....	693.31			971.93		
Insurance.....				128.79		
Promotional.....	3,653.94		24,771.84	5,187.45		49,392.17
Public Relations						
Salaries.....	3,743.87			4,858.34		
Travel.....	1,922.10		5,665.97	3,684.66		8,543.00

Legal and Investigation

Salaries	5,875.00		9,670.90	
Travel	6,260.22		7,706.11	
Telephone and Telegraph			153.28	
Equipment Purchased			3,520.72	
Maintenance of Equipment			487.00	
Cas, Oil, and Lubricants			631.76	
Miscellaneous	109.17		350.89	
Insurance			104.68	
Special Attorney Fees	4,963.50	17,207.69	10,056.33	32,681.67

*Pittman-Robertson Projects

Salaries	11,581.64		19,197.53	
Travel	5,179.29		6,530.97	
Office Supplies			50.80	
Telephone and Telegraph			18.39	
Postage and Shipping Costs			141.76	
Equipment Purchased			672.49	
Maintenance of Equipment			697.28	
Cas, Oil, and Lubricants			1,311.86	
Miscellaneous			10,813.27	
Rent			160.00	
Insurance			416.84	
Land Purchased and Leased	840.00		128,477.93	
Revolving Fund			500.00	
Project Operational Costs	13,082.96	50,682.89	11,075.77	180,064.89

Quail Restocking Program

Salaries			745.15	
Travel			871.95	
Equipment Purchased			1,594.35	
Miscellaneous Expense			173.21	
Insurance			49.74	3,434.40

FINANCIAL STATEMENT—Continued

	JANUARY 1 TO DECEMBER 31, 1947			JANUARY 1 TO DECEMBER 31, 1948		
	Item Amount	Sub-Dept. Total	Department Total	Item Amount	Sub-Dept. Total	Department Total
DISBURSEMENTS BY DEPARTMENT AND PURPOSE						
Restocking						
Deer Stock Purchased.....				16,770.00		
Pheasant Stock Purchased.....				262.50		
Quail Stock Purchased.....	65,191.73			325.00		
Turkey Stock Purchased.....	7,026.37		72,218.10	200.00		17,557.50
Hyacinth Control	1,500.00		1,500.00			
Legislative Relief Act						
H. B. Dinkins—Relief.....	344.92		344.92			
**Ocala National Forest						
Salaries.....				9,837.10		
Travel.....				1,232.50		
Miscellaneous.....				58.00		11,127.60
Total Disbursements			\$ 894,114.17			\$ 1,303,153.66
Cash Account						
Balance, State Treasury, December 31	\$655,191.31			\$482,439.94		
Cash due from County Judges (1947)	17.30					
Cash due from unpaid Check.....	5.00					

LESS:					
Reserve for Hendry County Deer					
Restocking	\$ 4,575.00			\$ 4,575.00	
Funds for Replacement of					
Levy County Deer	810.00			50.00	
Cancelled Warrants	501.17			47.20	
Refund Payable for Over-					
payment on Licenses				70.00	
Credit due County Judges					
(1948)				105.55	
Available Balance, December 31		\$ 649,327.44			\$ 477,592.19
		\$ 1,543,441.61			\$ 1,780,745.85

* All Expenditures under the Account "Pittman-Robertson" are reimbursable from the Federal Government by the amount of 75% of disbursements.

** The disbursements shown under "Ocala National Forest" during 1948 covers disbursements made for 1947 expenses as follows Salaries \$4,250.00, and Travel \$1,232.50, a total of \$5,482.50. Travel and other minor expenses incurred in December, 1948, will be paid in January, 1949.

